

**Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic Accreditation
Accreditation Department**



Academic Program and Course Description Guide

2026

Introduction:

The educational program is a well-planned set of courses that include procedures and experiences arranged in the form of an academic syllabus. Its main goal is to improve and build graduates' skills so they are ready for the job market. The program is reviewed and evaluated every year through internal or external audit procedures and programs like the External Examiner Program.

The academic program description is a short summary of the main features of the program and its courses. It shows what skills students are working to develop based on the program's goals. This description is very important because it is the main part of getting the program accredited, and it is written by the teaching staff together under the supervision of scientific committees in the scientific departments.

Ministry of Higher Education and Scientific Research
Scientific Supervision and Evaluation Authority
Quality Assurance and Academic Accreditation Department

Academic Program Description Form for Colleges and Institutes

2025/2026

Bologna System

University: Basrah

College: Computer Science and Information Technology

Department: Cybersecurity Science

Date of filling out the file: 10/9/2026

Signature:

Head of the Department:

Dr. Muslim Mohsin Khudhair

Date:

Signature:

Scientific Assistant:

Prof. Dr. Raida S. Khudher

Date: 21/9/2026

File reviewed by: Quality Assurance and Performance Evaluation Division

Signature:

Name of Director of Quality Assurance and Performance Evaluation Division:

Lec. Asmaa Shareef

Date:

21/9/2026

The Dean's approval:

1. Program Vision

The College of Computer Science and Information Technology at the University of Basra strives to achieve leadership and excellence at both the regional and international levels, and to consolidate its position locally as a leading academic and research institution in the fields of computer science, information technology, and technological and digital innovations.

The College also aspires to be a distinguished center for preparing and qualifying scientific and technical competencies capable of leading the paths of digital transformation, anticipating the future, and employing knowledge and modern technologies in the service of society and sustainable development, through excellence in the fields of computer science, information systems, intelligent medical systems, cybersecurity, artificial intelligence, networks, and all other modern technical and digital fields and applications.

2. Program Mission

The College of Computer Science and Information Technology at the University of Basra is committed to fulfilling its academic, research, and societal mission through:

1. Offering integrated and advanced academic programs in the fields of computer science, computer information systems, intelligent medical systems, and cybersecurity, with future expansion into specializations such as artificial intelligence, networks, and other disciplines necessitated by emerging scientific developments and labor market requirements.
2. Preparing qualified graduates who possess scientific knowledge, technical skills, analytical and creative thinking abilities, and problem-solving capabilities, enabling them to compete and excel in the local, regional, and international job markets.
3. Keeping pace with the rapid developments in the fields of information technology and digital transformation, and employing them in advancing the educational and research processes to enhance the quality of academic outcomes.
4. Promoting applied scientific research and innovation, and encouraging collaboration and integration with industrial, medical, and governmental sectors, to contribute to devising innovative technological solutions to national challenges and supporting the pathways of sustainable development.
5. Building effective partnerships with academic, governmental, industrial, medical, and private sector institutions, to enhance the exchange of expertise and knowledge, and to support the digital economy and community development.
6. Providing an academic and research environment that stimulates lifelong learning, creativity, teamwork, commitment to professional ethics, and openness to the local and international community.

3. Program Objectives

First: Education and Learning

Continuously developing and updating curricula and academic programs in line with the rapid scientific and technological advancements in the fields of computing and information technology, and enhancing practical and applied teaching methods through the utilization of modern specialized laboratories, applied and field projects, thereby linking theoretical knowledge with real-world applications. The College also seeks to produce graduates who possess high scientific and technical competence, as well as professional and personal skills that qualify them to compete in the local, regional, and international job markets.

In addition to the above, the College aims to establish new academic programs and specializations that respond to labor market demands and future trends, particularly in the fields of artificial intelligence, networks, and other promising disciplines, and to contribute to promoting lifelong learning and developing students' skills to enable them to keep pace with the rapid transformations in the job market and technology.

Second: Scientific Research and Innovation

The College seeks to support and encourage applied and innovative scientific research, directing it toward addressing national challenges and issues, and investing its outputs and outcomes in developing solutions and applications in industrial, agricultural, medical, and technological fields, thereby contributing to achieving sustainable development and serving society. It also works to form and develop specialized research groups and teams in promising scientific and technical fields, particularly artificial intelligence, cybersecurity and information security, intelligent medical systems, data analytics, information systems, and other modern fields, in addition to elevating the level of scientific publishing and encouraging faculty members and researchers to produce and publish rigorous scientific research in peer-reviewed journals and prestigious local and international conferences. The College places special emphasis on fostering innovation, creativity, and technological entrepreneurship, and on supporting innovative initiatives and projects by students and faculty members, as well as expanding the scope of research collaboration and partnerships with universities, research centers, and governmental, industrial, and medical institutions, both locally and internationally, to enhance the exchange of expertise and knowledge, elevate the level of scientific research and innovation, and support the College's standing and its active contribution to scientific and technological development and community service.

Third: Community Service and Institutional Partnership

The College seeks to strengthen and enhance cooperation and partnership with educational, industrial, medical, and governmental institutions, exchange expertise and knowledge, and build effective strategic partnerships in the fields of technology and digital transformation, thereby reinforcing its academic and societal role and enabling the utilization of its scientific and technical expertise in the service of society. The College also works on providing consultancy and technical services, organizing training courses and professional development programs, contributing to

human capacity building, raising competence levels, and keeping pace with the requirements of digital transformation, in addition to employing academic and technical expertise to address societal challenges and contribute to achieving sustainable development goals. The College is also concerned with raising community awareness of the importance of cybersecurity, information security, and artificial intelligence, and promoting the safe and responsible use of technology, as well as fostering openness to the local and international community, expanding areas of scientific and research cooperation, and building sustainable relationships and partnerships with universities, centers, and research institutions within Iraq and abroad, contributing to the exchange of knowledge and expertise, enhancing innovation, and consolidating the College's position as an active partner in scientific, technological, and societal development.

Fourth: Institutional Development and Quality Assurance

The College seeks to develop its technical infrastructure and elevate the level of its laboratories and educational and research facilities in line with the requirements of modern education, scientific research, and innovation, and to enhance its capacity to keep pace with rapid developments in technical and academic fields. It also commits to applying national and international quality and academic accreditation standards, and strives to achieve academic accreditation in accordance with relevant international standards, including ABET standards, to ensure the elevation of the quality of academic programs and their outcomes. With a view to enhancing institutional performance efficiency, the College works on developing the capacities of its teaching, administrative, and technical staff through continuous training and professional development programs, alongside developing administrative and academic systems and transitioning toward digital management to enhance efficiency and transparency and improve the quality of services provided. The College is also committed to preparing and implementing sustainable strategic plans to develop its academic, research, and administrative systems, expand its programs, and establish new departments and specializations that align with scientific and technological developments and future labor market needs, in addition to embedding a culture of quality and continuous improvement across all academic, administrative, and research operations, thereby ensuring institutional excellence, enhancing the College's competitiveness, and consolidating its academic standing locally, regionally, and internationally.

Curriculum for the first Year, First Semester.

Module 1

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Computer Programming I			Module Delivery	
Module Type	Core			☒ Theory ☐ Lecture ☒ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	CyB 101				
ECTS Credits	7				
SWL (hr/sem)	175				
Module Level		UC		Semester of Delivery	
Administering Department		CyB		College	CSIS
Module Leader	Dr. Haider			e-mail	
Module Leader's Acad. Title		Assist Proff		Module Leader's Qualification	
				PHD	
Module Tutor	Name (if available)			e-mail	E-mail
Peer Reviewer Name		Name		e-mail	E-mail
Scientific Committee Approval Date				Version Number	1.0

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None		Semester

Co-requisites module	CyB107 Computer Programming II	Semester	2/Level 1
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Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. Gaining knowledge of programming languages offers valuable insights into various other domains and disciplines.. 2. Acquiring proficiency in the effective and responsible utilization and administration of programming languages is crucial for managers and other professionals in today's interconnected global information-driven society. 3. Learn that people must understand the components of programming language and how all of these components work together to bring value to an organization. 4. We need to direct our attention to the role that programming languages play in today's interconnected global information society. 5. The competitiveness of many companies relies significantly on the efficient utilization of information systems. Consequently, we need to consider the potential benefits and drawbacks that integrating information systems can bring to both businesses and society. 6. what is a programming language ? A language is a group of interrelated statement working together toward a common goal by accepting inputs and producing outputs in an organized transformation process 7. why learning algorithm? 8. why learning Flow chart? 9. Why learn about Basic input/output? 10. Why learn about loop type? - for..loop - while..loop 11. Why Learn about functions? - Defining a Function, Calling a Function, Function Arguments(Call by value, Call by Reference)
Module Learning Outcomes	1- Provide the student with the essential skills required to excel in the Python programming language. Python power users possess a comprehensive grasp of the language and can discern the most appropriate tools or functions for specific situations. 2- Acquire crucial skills for working with both basic 'if' statements and

مخرجات التعلم للمادة الدراسية	nested 'if' statements. Gain essential skills for handling 'for' statements and nested 'for' statements, which are types of loops. -3 Acquire proficiency in writing and utilizing the essential functions. -4
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Principles of Python Language</u> - How can use Python program , entering of variable types , basic input/output statement, and type of operators. IF TYPE - If statement,nested if statement. <u>LOOP TYPES</u> - For loop,nested for loop ,while,do while . <u>Function</u> - Defining a Function, Calling a Function, Function Arguments(Call by value, Call by Reference)

Learning and Teaching Strategies			
استراتيجيات التعلم والتعليم			
Strategies	The main strategy that will be adopted in delivering this module is to encourage students’ participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes and the lab, interactive tutorials, and by considering types of simple experiments involving some sampling activities that are interesting to the students.		
Student Workload (SWL)			
الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا			
Structured SWL (h/sem)		Structured SWL (h/w)	
الحمل الدراسي المنتظم للطالب خلال الفصل	79	الحمل الدراسي المنتظم للطالب أسبوعيا	5

Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	96	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	6.4
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	175		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Computer Programming language
Week 2	Algorithm Design
Week 3	Flowcharts
Week 4	COMMENTS
Week 5	DATA TYPES

Week 6	VARIABLE TYPES
Week 7	CONSTANTS/LITERALS
Week 8	BASIC INPUT/OUTPUT
Week 9	OPERATORS
Week 10	DECISION-MAKING STATEMENTS
Week 11	LOOP TYPES (for ..loop)
Week 12	LOOP TYPES(while..loop)
Week 13	LOOP TYPES(Do..while loop)
Week 14	FUNCTIONS
Week 15	FUNCTIONS(void)
Week 16	Exam

Delivery Plan (Weekly Lab. Syllabus)	
المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: learning how can use program Python
Week 2	Lab 2: execute many examples of statements BASIC INPUT/OUTPUT
Week 3	Lab 3: execute many examples of VARIABLE TYPES
Week 4	Lab 4: execute many examples of if statement
Week 5	Lab 5: execute many examples of nested if statement
Week 6	Lab 6: execute many examples of switch statement
Week 7	Lab 7: execute many examples of for..loop statement
Week 8	Lab 8 execute many examples of for..loop statement
Week 9	Lab9: execute many examples of nested for..loop statement

Week 10	Lab 10: execute many examples of nested for..loop statement
Week 11	Lab 11: execute many examples of While..loop statement
Week 12	Lab 12: execute many examples of Do..While..loop statement
Week 13	Lab 13:execute many examples of functions
Week 14	Lab 14: execute many examples of functions(void)
Week 15	Lab15: execute many examples of functions(void)

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Python Programming by Adam Steward - 2022	No
Recommended Texts	Python Programming : An Introduction to Computer Science : Second Edition 2009	No
Websites	https://www.guru99.com/python-tutorials.html	

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A – Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 – 89	Above average with some errors
	C – Good	جيد	70 – 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 – 69	Fair but with major shortcomings
	E – Sufficient	مقبول	50 – 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Module 2

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية				
Module Title	Discrete Structures		Module Delivery	
Module Type	Core		☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	CyS102			
ECTS Credits	5			
SWL (hr/sem)	125			
Module Level	UGx11 1	Semester of Delivery		
Administering Department	CyS	College	College of Computer Science and Information Technology	
Module Leader			e-mail	
Module Leader's Acad. Title			Module Leader's Qualification	
Module Tutor	Name (if available)		e-mail	E-mail
Peer Reviewer Name	Name		e-mail	E-mail
Scientific Committee Approval Date	01/10/2023		Version Number	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	This course aims at teaching students how to think mathematically. Students will learn a set of mathematical facts and techniques as well as some major discrete structures that related with computers. They will also learn how to use these facts, techniques and discrete structures to design computer-based solutions for real life problems.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	- Developing the acquisition of some acquired skills from inflammation - Everyday life. - Developing mathematical skills (skills that help form mathematical sense) skills Estimation, mental calculation, judging the reasonableness of the results, etc.). - Acquiring various methods of conducting operations. - Develop the ability to seriously classify and collect numerous data, tabulate and read them representation and interpretation. - Students should understand relations, equivalence relations, and partial orders. - Students should develop problem-solving skills related to the design and analysis of algorithms.
Indicative Contents المحتويات الإرشادية	- Understanding of Fundamental Concepts: - Demonstrating a solid understanding of foundational concepts in discrete mathematics, such as set theory, propositional and first-order logic, and mathematical proof techniques. - Combinatorial Problem Solving: - Solving combinatorial problems by applying techniques like permutations, combinations, binomial coefficients, and counting principles. - Analyzing and solving problems using the Pigeonhole Principle and the principle of Inclusion-Exclusion. - Mastery of Graph Theory: - Demonstrating proficiency in graph theory, including the ability to define and work with graphs, trees, paths, cycles, connectivity, and various graph algorithms.

	○ Solving real-world problems using graph theory, like network design, shortest path algorithms, and matching problems. 4. Application to Computer Science: ○ Applying discrete structures concepts to computer science, such as understanding finite state machines, formal languages, regular expressions, and context-free grammars. ○ Designing and analyzing algorithms based on discrete mathematics principles. 5. Relations and Functions: ○ Understanding relations, equivalence relations, and partial orders, and being able to apply them to solve problems. ○ Working with functions, including injective, surjective, and bijective functions, and understanding their properties. 6. Proof and Mathematical Rigor: ○ Demonstrating the ability to construct clear and rigorous mathematical proofs using techniques like mathematical induction, proof by contradiction, and direct proof. 7. Algorithm Analysis: ○ Analyzing the time and space complexity of algorithms. ○ Understanding the basics of computational complexity theory, such as classifying problems into P, NP, and NP-complete. 8. Problem-Solving Skills: ○ Developing problem-solving skills by applying discrete mathematics concepts to a wide range of practical and theoretical problems. ○ Formulating and solving mathematical and algorithmic problems. 9. Application to Diverse Fields: ○ Recognizing how discrete structures are applied in various fields, such as computer science, cryptography, network design, and operations research. 10. Mathematical Modeling: ○ Using discrete structures to model and analyze real-world scenarios, including optimization problems, scheduling, and decision-making. 11. Critical Thinking and Abstraction: ○ Developing critical thinking skills and the ability to abstract complex problems into simpler, discrete structures for analysis. ○ These indicative outcomes reflect the knowledge and skills that students typically gain from a course in discrete structures. Depending on the course's depth and specific focus, these outcomes may be adjusted or expanded to suit the learning objectives of the program or institution.
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Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by solving exercises.
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Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ أسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	4.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	61	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	20% (10)	5 and 10	LO #1, #2 and #4
	Assignments	2	20% (10)	2 and 12	LO #1, #3
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #5
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	• Sets • Subsets • Operations on sets • Computer Representation of Sets
Week 2	• Cartesian product • Sequences • Properties of Integers
Week 3	• Matrices • Propositional and Logical Operations • Conditional Statements
Week 4	• Conditional Statements • Mathematical Induction • Product sets and Partitions
Week 5	• Methods of Proving Theorems • Recursive • Relations
Week 6	• Properties of Relations • Operations Relations • Computer Representation of Relations
Week 7	• Properties of Relations • Equivalence Relations • Computer Representation of Relations and Digraphs • Operations and Relations
Week 8	• Functions • Functions for Computer Science • Domain and codomain of the function

Week 9	• Range of the function • Graph of function • Functions types
Week 10	• Permutation Functions • Graph • The types of graphs
Week 11	• Some Special Simple Graphs • Representing Graphs • Isomorphism and Isomorphic of graphs
Week 12	• Common graphs • Some important concepts
Week 13	• Kinds of graphs • More graphs
Week 14	• Trees • Labeled Trees
Week 15	• Tree Searching • Undirected Trees
Week 16	• Tree Traversal • Traversal Algorithms • Infix, Prefix, and Postfix Notation

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Kolman, Busby, and Ross (2008). Discrete Mathematical Structures, 6th ed. Prentice Hall.	Yes
Recommended Texts	Kenneth Rosen (2012). Discrete Mathematics and Its Applications, 7th ed. Mc-Graw Hill.	No

Websites	
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Grading Scheme مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 – 89	Above average with some errors
	C - Good	جيد	70 – 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 – 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 – 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

Module 3

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية		
Module Title	Computer Organization	Module Delivery

Module Type	Basic		☒ Theory ☐ Lecture ☒ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	CyS103			
ECTS Credits	5			
SWL (hr/sem)	125			
Module Level	1	Semester of Delivery	1	
Administering Department	CyS	College	College of Computer Science and Information Technology	
Module Leader			e-mail	
Module Leader's Acad. Title	Assist Proff	Module Leader's Qualification	PHD	
Module Tutor	Name (if available)	e-mail	E-mail	
Peer Reviewer Name	Name	e-mail	E-mail	
Scientific Committee Approval Date	1/10/2023	Version Number	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	Semester	
Co-requisites module		Semester	
Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية			

Module Objectives أهداف المادة الدراسية	1. Understand Computer Organization: Explain the significance of computer organization in the context of computing systems and recognize its historical development. 2. Central Processing Unit (CPU): Identify the key components of a CPU, describe the CPU instruction execution cycle, and utilize Python for simulating CPU behavior. 3. Memory Systems: Analyze memory hierarchy, comprehend memory organization and addressing modes, and create simulations of memory systems using Python. 4. Assembly Language Programming: Familiarize themselves with assembly language, particularly MIPS assembly, and develop proficiency in writing, debugging, and simulating assembly programs using Python. 5. Input/Output (I/O) and Peripherals: Examine I/O organization, device controllers, and communication mechanisms, and simulate I/O operations using Python. 6. Computer Arithmetic: Understand binary and floating-point arithmetic, explore arithmetic operations in the Arithmetic and Logic Unit (ALU), and implement basic arithmetic operations using Python. 7. Software-Hardware Interface: Analyze the interface between software and hardware, interpret software instructions' execution on hardware, and conduct Python-based simulations of hardware interactions.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Explain the historical development and significance of computer organization. 2. Describe the components of a CPU, including the ALU, control unit, and registers, and understand the CPU's instruction execution cycle. 3. Create Python simulations to model CPU behavior. 4. Define the memory hierarchy, address modes, and organization, and develop Python-based memory system simulations. 5. Write, debug, and simulate assembly language programs, specifically in MIPS assembly, using Python. 6. Simulate I/O operations and understand I/O organization and device communication mechanisms. 7. Perform binary and floating-point arithmetic, implement basic arithmetic operations in Python, and comprehend the role of the ALU. 8. Develop Python simulations to illustrate software-hardware interactions.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. - <u>Principles of about low level Programming</u> How can Python program be used simulate low level programming. - How Hardware interacts with software during operation

	- The difference between Processes - How programming designers improve the performance.
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Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes and the lab, interactive tutorials, and by considering types of simple experiments involving some sampling activities that are interesting to the students.
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	61	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #2-#8
	Lab	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #1, #2, #3
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Introduction to Computer Organization
Week 2	Historical development of computer architecture and the role of computer organization in computing systems.
Week 3	Components of the CPU: ALU, control unit, registers, CPU operation and the instruction execution cycle.
Week 4	Introduction to Python and its role in simulating CPU behavior.
Week 5	Memory hierarchy: primary (RAM, ROM), cache, secondary storage, memory organization and addressing modes.
Week 6	Simulating memory systems using Python.
Week 7	Introduction to assembly language. MIPS assembly language: syntax, instructions, addressing modes.
Week 8	Writing and debugging simple assembly programs using Python.
Week 9	Input/Output (I/O) and Peripherals: I/O organization and interfacing. Device controllers and communication.
Week 10	Simulating I/O operations using Python.
Week 11	Computer Arithmetic
Week 12	Computer Arithmetic Cont.
Week 13	Software-Hardware Interface
Week 14	Python-based simulations of hardware interactions.
Week 15	Review and Final Exam
Week 16	Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Introduction to Assembly Language: Writing and executing simple assembly programs. Understanding the syntax and structure of assembly language.
Week 2	Lab 2: Memory Systems and Addressing: Exploring memory hierarchy through simulations. Practicing memory addressing modes and calculations.
Week 3	Lab 3: CPU Operation and Registers: Simulating CPU operation and instruction execution.
	Working with CPU registers and flags.

Week 4	Lab 4: Assembly Language Programming: Writing more complex assembly programs to solve specific tasks. Debugging assembly code using tools and simulators.
Week 5	Lab 5: I/O Operations: Simulating input and output operations using Python. Interfacing with devices and device controllers.
Week 6	Lab 6: Computer Arithmetic: Implementing basic arithmetic operations in assembly language. Simulating fixed-point and floating-point arithmetic.
Week 7	Lab 7: pelining and Parallel Processing: Understanding pipelining concepts through practical examples. Exploring parallel programming using multicore processors.
Week 8	Lab 8 Memory Management and Virtual Memory: Simulating memory allocation and deallocation. Exploring virtual memory concepts and page replacement algorithms.
Week 9	Lab9: Hardware Simulations: Creating hardware simulations in Python. Simulating CPU behavior, memory systems, and I/O operations.
Week 10	Lab 10: Assembly Language Projects: Undertaking more extensive assembly language projects. Developing practical solutions to real-world problems.
Week 11	Lab 11: Benchmarking and Performance Analysis: Measuring and analyzing the performance of different architectures. Comparing the efficiency of assembly code vs. high-level languages.
Week 12	Lab 12: Operating System Interaction:
Week 13	Lab 13: Interacting with the operating system through assembly language.
Week 14	Lab 14: Understanding system calls and their impact on hardware.
Week 15	Lab15: Final Project

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
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Required Texts	Computer Organization and Design" by David A. Patterson and John L. Hennessy".	No
Recommended Texts	Computer Systems: A Programmer's Perspective" by Randal E. Bryant and David R. O'Hallaron"	No
Websites		

Grading Scheme مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A – Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C – Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E – Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

Module 4

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية		
Module Title	Data Security Principles	Module Delivery
Module Type	Core	☒ Theory ☐ Lecture ☒ Lab
Module Code	CyS104	
ECTS Credits	5	

SWL (hr/sem)	125	☒ Tutorial ☐ Practical ☐ Seminar	
Module Level	UC	Semester of Delivery	1
Administering Department	CyS	College	College of Computer Science and Information Technology
Module Leader		e-mail	
Module Leader's Acad. Title	Assist Proff	Module Leader's Qualification	PHD
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	1/10/2023	Version Number	1.0

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	Semester	
Co-requisites module		Semester	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	12. Understand the core principles of data security, including confidentiality, integrity, and availability. 13. Recognize common security threats and vulnerabilities in digital environments. 14. Apply best practices for protecting personal data, devices, and online activities. 15. Identify social engineering tactics and scams and employ strategies to avoid them.

	16. Gain practical skills for securing passwords, email communication, and social media accounts. 17. Learn about malware and antivirus tools, and how to protect against them. 18. Understand the importance of privacy and compliance with data protection regulations. 19. Develop critical thinking skills to assess and respond to data security incidents.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understand core data security principles: confidentiality, integrity, and availability. 2. Identify common security threats and vulnerabilities. 3. Explain encryption and access control mechanisms. 4. Recognize and respond to social engineering tactics. 5. Comprehend privacy regulations and compliance requirements. 6. Apply practical skills in password management and device security. 7. Evaluate real-world security scenarios and propose solutions. 8. Develop ethical and security-conscious decision-making skills.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. - Intro to Data Security - Encryption & Access Control - Network Security Privacy & Compliance - Social Engineering & Response - Recognizing social engineering. - Responding to threats. - Secure Practices & Review

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The course employs various strategies, including lectures, discussions, hands-on activities, group projects, assessments, online resources, and guest speakers, to engage students and develop their understanding of data security principles. These strategies aim to create an interactive and comprehensive learning environment.
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Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	61	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1, #3, #5, #7
	Assignments	2	10% (10)	2 and 12	LO #2, #3, #6
	Lab	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #1, #2, #5, #7
	Midterm Exam	2hr	10% (10)	7	LO #1 - #7

Summative assessment	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Data Security : Understanding data security.
Week 2	The importance of data security. Common security threats.
Week 3	Protecting Your Data: Passwords and creating strong ones.
Week 4	Securing your devices. Safe internet usage.
Week 5	Email and Social Media Safety: Recognizing phishing emails.
Week 6	Protecting social media accounts. Safe information sharing.
Week 7	Online Shopping and Banking: Secure online shopping practices.
Week 8	Protecting financial information. Safeguarding personal data..
Week 9	Privacy and Personal Information: Identifying personal information.
Week 10	Privacy settings and online profiles. Risks of oversharing.
Week 11	Malware and Viruses: Understanding malware.
Week 12	Recognizing and avoiding malware.

	Introduction to antivirus software.
Week 13	Social Engineering and Scams: What is social engineering?
Week 14	Common scams and how to avoid them. Reporting suspicious activities.
Week 15	Review and Final Assessment
Week 16	Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Orientation and Introduction to Encryption: Lab orientation, safety guidelines, and expectations. Introduction to encryption concepts. Lab tool: VeraCrypt - Setting up encrypted containers.
Week 2	Lab 2: Encryption Practices: Practical encryption exercises using VeraCrypt. Secure file storage and retrieval.
Week 3	Lab 3: Access Control Configuration: Introduction to access control. Lab tool: Windows Security Policies - Configuring access control lists (ACLs).
Week 4	Lab 4: User Authentication: Implementing user authentication and access policies. Testing and validating access control measures.
Week 5	Lab 5 Threat Recognition and Response: Understanding network traffic analysis.

	Lab tool: Wireshark - Analyzing network traffic for security threats.
Week 6	Lab 6: Simulated Incident Response: Hands-on exercises in simulated incident response. Developing incident response plans. Simulating fixed-point and floating-point arithmetic.
Week 7	Lab 7: Security Tool Utilization (Part 1): Lab tool: Wireshark - Advanced network traffic analysis. Identifying security incidents.
Week 8	Lab 8: Security Tool Utilization (Part 2): Lab tool: Snort - Configuring and using intrusion detection. Responding to detected intrusions.
Week 9	Lab9: Risk Assessment and Mitigation (Part 1): Introduction to vulnerability assessments. Lab tool: Nessus - Scanning for vulnerabilities.
Week 10	Lab 10: Risk Assessment and Mitigation (Part 2): Analyzing vulnerability scan results. Proposing security measures based on findings.
Week 11	Lab 11: Secure Communication: Introduction to secure communication. Lab tool: GnuPG (GPG) - Configuring email encryption using GPG.
Week 12	Lab 12: Secure File Transfer: Secure file transfer using GPG. Ensuring confidentiality and integrity.

Week 13	Lab 13: Final Project (Part 1): Introduction to the final project. Project selection and planning.
Week 14	Lab 14: Final Project (Part 2): Project work and implementation. Troubleshooting and finalizing project outcomes.
Week 15	Lab15: Project Presentations and Course Conclusion

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Principles of Information Security" by Michael E. Whitman and Herbert J. Mattord	No
Recommended Texts	"Computer Security: Principles and Practice" by William Stallings and Lawrie Brown	No
Websites	https://owasp.org	

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A – Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C – Good	جيد	70 - 79	Sound work with notable errors

	D – Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E – Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
(0 – 49)	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Module 5

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Calculus		Module Delivery	
Module Type	Core		☒ Theory ☒ Lectures	
Module Code	CyB 106			
ECTS Credits	5			
SWL (hr/sem)	100			
Module Level	1	Semester of Delivery	1	
Administering Department	Type Dept. Code	College	Type College Code	
Module Leader		e-mail		
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	Ph.D.	
Module Tutor	Name (if available)	e-mail	E-mail	
Peer Reviewer Name	Name	e-mail	E-mail	

Scientific Committee Approval Date		Version Number	1.0
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Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Calculus	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	-Cognitive Goals 1. Upon Successful completion of this subject, students should : 2. Be able to use algebra accurately; 3. Be able to plot and interpret graphs 4. Be able to use exponential, logarithm, and trigonometric functions in applications; 5. Be able to calculate the sums of arithmetic and geometric series and use them in simple financial calculations; 6. Be able to use basic rules of differentiation and calculate derivatives of simple functions; 7. Be able to use matrix in solving linear system of equations; -Skill goals 1. Enable the student to refer the mathematical problem to a program and find a solution through the computer. 2. Student realization of the close relationship between mathematical problems and computer programs

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. 1. This subject is designed for students who enter university without a strong background in mathematics 2. It is also for students who are planning to enroll in subjects requiring basic numeracy skills such as sciences, computing and information technology. 3. The subject reinforces calculation skills, basic algebra . 4. This subject is designed to work with formula. 5. It is also to use applications of exponential and logarithmic functions. 6. It is designed how applying matrix to solve linear system of equations.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part A – Sequences and series <u>Sequence</u> is a function whose domain is the set of natural numbers. The terms of the sequence are the function values. There will be studied two types of sequences: arithmetic and geometric sequences with their partial sums. While series means that the infinite sum of geometric sequence. [12 hrs] Part B – Matrices Matrices are simply a rectangular array of numbers with m rows and n columns . There will be studied some: types of matrices, algebra of matrices. It is also studied how to find inverse of matrix, how to use matrix and its inverse to solve linear system of equations, how to find determinant of matrix and use it to solve linear system of equations. [12 hrs] Part C – Derivatives and integrals Derivatives mean that if $f: x \rightarrow y$ is a function, the derivative of a function f at a point x_0 written $f'(x_0)$; is given by $f'(x_0) = \lim_{x \rightarrow x_0} \frac{f(x) - f(x_0)}{x - x_0},$ If this limit exists and finite. There will be studied the derivatives of usual functions, implicit derivatives, derivatives of trigonometric

	functions, derivatives of exponential and logarithm functions. Graphical of exponential and logarithm functions. While integrals means that if $f(x)$ function defined at some interval, let $F(x)$ be another function such that $F'(x) = f(x)$, $F(x)$ called an infinite integral of $f(x)$ and is written as the following form $\int f(x)dx = F(x) + C$. [12 hrs]. Part D – Interest Interest is the rental fee charged by a lender to a business or an individual for the use of money . There will be studied simple and compound interests. Simple interest means that the interest is calculated <i>only once</i> for the entire time period of the loan. At the end of the time period, the borrower repays the principal plus the Interest . while compound interest means that means that the interest is calculated more than once during the time period of the loan. [9 hrs].
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1.Explain the topic in detail by the teacher by writing the topic and explaining it on the board and other teaching aids 2. Discussion during the lecture period 3. Doing homework 4. See the websites of the subject

Student Workload (SWL) الحمل الدراسي للطلاب محسوب لـ ١٥ أسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	4.2
Unstructured SWL (h/sem)	61	Unstructured SWL (h/w)	4

الحمل الدراسي غير المنتظم للطلاب خلال الفصل		الحمل الدراسي غير المنتظم للطلاب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	125		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction – Sequences
Week 2	Arithmetic sequences and their partial sums
Week 3	Geometric sequences and their partial sums
Week 4	Series

Week 5	Matrices and algebra of matrices
Week 6	Inverse of matrices
Week 7	Solving linear system of equations by using inverse of matrices
Week 8	Determinant and using it to solve linear system of equations
Week 9	Derivatives
Week 10	Derivatives of trigonometric, exponential, logarithm functions
Week 11	Integrals
Week 12	Integral of trigonometric, exponential, logarithm functions
Week 13	Interest and simple interest
Week 14	Compound interest
Week 15	Present and future values of an annuity
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Cheryl Cleaves, Margie Hobbs and Jeffry Noble	Yes
Recommended Texts	James Stewart , Lothar Redlin and Saleem Watson Robert Brechner and George Bergeman	Yes
Websites		

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A – Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
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Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

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Module 6

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information		
معلومات المادة الدراسية		
Module Title	English I	Module Delivery
Module Type	Support	☒ Theory
Module Code	UOB102	☐ Lecture
ECTS Credits	2	☐ Lab
SWL (hr/sem)	50	☐ Tutorial
		☐ Practical

			☐ Seminar
Module Level	1	Semester of Delivery	2
Administering Department	CyB	College	CSIT
Module Leader		e-mail	
Module Leader's Acad. Title	Professor	Module Leader's Qualification	Ph.D.
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	/ /2023	Version Number	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	CyB105	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1. Developing communication approaches. 2. Enhancing total physical response (TPR). 3. Establishing multi-outcome learning (English and science knowledge for instance).
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Improved Communication Skills: Students should be able to communicate more effectively in English, expressing themselves with greater fluency and accuracy. They can participate in everyday conversations, express opinions, and discuss various topics. 2. Expanded Vocabulary: Learners should have developed a broader range of vocabulary, allowing them to understand and use a wider variety of words

	and expressions. 3. Grammar Proficiency: Students are expected to have a better grasp of English grammar, allowing them to construct more complex sentences and convey different tenses and aspects more accurately. 4. Reading Comprehension: Learners should be able to read and comprehend a variety of texts, such as articles, short stories, and excerpts from novels, with a reasonable level of understanding. 5. Writing Skills: Students should be able to write coherent paragraphs and short texts, such as emails, letters, and simple essays, demonstrating improved sentence structure and organization. 6. Listening Skills: Learners should have developed better listening skills, allowing them to understand and follow conversations, interviews, and media in English with less difficulty. 7. Cultural Awareness: At this level, students may have been exposed to various cultural aspects of English-speaking countries, leading to a better understanding of cultural norms and customs. 8. Independent Learning: Students should be more confident and independent in their language learning journey, taking initiatives to practice and learn outside of the classroom. 9. Preparation for Advanced Levels: English Level II usually serves as a foundation for more advanced language courses. After completing this level, students should be ready to progress to higher-level language studies.
Indicative Contents المحتويات الإرشادية	International student: READING: Going abroad to study. • Following instructions: filling in forms • Reading methods: skim; scan; intensive reading; extensive reading WRITING: A host family • Checking your writing: error correction - punctuation and spelling • Writing an informal email Where in the world: READING: Three countries

	• Skimming and scanning: reading for the general idea, and for particular information WRITING: My country • Brain storming ideas: topic areas and examples; • completing a paragraph • Linking ideas (1): but, however, although • Writing a description of my country Newspaper articles: READING: An unexpected journey • Predicting content: using the title and the pictures • Meaning from context: guessing the meaning of new words WRITING My country • Brainstorming ideas: topic areas and examples; completing a paragraph • Linking ideas (1): but, however, although Writing a description of my country Modern technology: READING Innovation • Purpose and audience (1 and 2): using visual and written clues WRITING Mistaken identity • Sentences/Paragraphs; helping your writing flow • Varying the structure: making writing interesting Writing an article Conferences and visits READING: A conference in Istanbul • Purpose and audience (1 and 2): using visual and written clues WRITING Invitations • Using formal expressions: writing academic emails and letters • Writing a formal email Science and our world: READING: Air pollution
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- Making notes: organizing recording, and remembering important information
- Interpreting meaning; recognizing fact and speculation

WRITING Technology - good or bad?

- Organizing ideas (1): planning the arguments for and against
- Linking ideas (2): first, for instance, in conclusion ... Writing a discursive essay

People: past and present

READING: Three famous writers

- Using original sources: dealing with difficult language and unknown vocabulary

WRITING: Trends

- Paraphrasing and summarizing: using other sources
- Writing a summary

The world of IT:

READING: Computers

- Rephrasing and explaining; dealing with difficult scientific and technological words
- Avoiding repetition (2): pronouns and what they refer to

WRITING: IT - benefits and drawbacks

- Linking ideas (3): cause and result Coherent writing; writing up notes
- Writing from notes

Inventions, discoveries, and processes:

READING: How things work

- Intensive reading: strategies for focusing your reading
- Linking ideas (4); sequencing words to describe a process

WRITING How things are made

- The passive voice; writing in neutral style
- Clarifying a sequence: describing a process

	• Writing a description of a process Travel and tourism: READING: International tourism • Interpreting data: statistical information in graphs, charts, and texts VOCABULARY DEVELOPMENT Varying vocabulary (2) • A voiding repetition (3): describing graphs using synonyms, adjectives + nouns, verbs + adverbs
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	For Teachers: 1. Interactive and Communicative Approach: Encourage students to engage in meaningful conversations, discussions, and role-plays. This approach emphasizes real-life communication and helps students practice using English in different contexts. 2. Error Correction: Provide constructive feedback on students' errors without discouraging them. Focus on correcting essential mistakes that hinder communication while praising their efforts to build confidence. 3. Contextual Learning: Use authentic materials like articles, videos, and short stories to introduce new vocabulary and grammar in relevant contexts. This helps students understand language usage in real-life situations. 4. Task-Based Learning: Design activities and tasks that require students to use English to complete meaningful projects or solve problems. This approach fosters critical thinking and language application skills. 5. Grammar in Context: Teach grammar points within the context of authentic texts or dialogues. This helps students see how grammar functions in real communication rather than just learning rules in isolation.

6. **Encourage Reading:** Assign reading materials suited to the students' proficiency level. Reading improves vocabulary, comprehension, and exposes students to different writing styles.
7. **Listening Practice:** Provide opportunities for listening exercises, such as watching English-language videos, movies, or podcasts. This enhances listening skills and exposes students to different accents and speech patterns.
8. **Writing Practice:** Assign writing tasks like essays, emails, or short stories. Provide feedback on their writing to improve their skills gradually.

For Students:

1. **Consistent Practice:** Regularly practice reading, writing, listening, and speaking in English. Consistency is crucial for improvement.
2. **Use Language Apps and Online Resources:** Utilize language learning apps and online resources to reinforce learning, expand vocabulary, and improve grammar.
3. **Join Language Exchange Groups:** Engage in language exchange programs or groups where you can practice speaking English with native speakers or other learners.
4. **Set Goals:** Establish clear language learning goals and track your progress. Celebrate achievements and milestones.
5. **Immerse Yourself:** Surround yourself with English as much as possible. Watch English movies, TV shows, and listen to English music or podcasts.
6. **Keep a Language Journal:** Write down new words, expressions, and grammar rules you learn. Review and practice them regularly.
7. **Practice with Different Media:** Practice English through various mediums like reading books, watching documentaries, listening to news, or participating in online forums.
8. **Be Patient and Persistent:** Language learning takes time and effort. Stay motivated and persistent even if you encounter challenges.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعاً

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	33	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	42	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #10,
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Report	1	20% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المناهج الاسبوعي النظري	
	Material Covered
Week 1	International student

Week 2	Where in the world
Week 3	Newspaper articles
Week 4	Conferences and visits
Week 5	Science and our world
Week 6	Midterm exam
Week 7	People: past and present
Week 8	The world of IT
Week 9	Inventions, discoveries, and processes
Week 10	Travel and tourism
Week 11	Final exam

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Sarah Philpot. Headway: Academic skills- reading, writing, and study skills. LEVEL 2 Student's Book. Oxford.	Yes
Recommended Texts		
Websites		

Grading Scheme				
مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition

Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

Curriculum for the first Year, Second Semester.

Module 1

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية		
Module Title	Computer ProgrammingII	Module Delivery
Module Type	Core	☒ Theory ☐ Lecture ☒ Lab
Module Code	CyS107	

ECTS Credits	7	☒ Tutorial ☐ Practical ☐ Seminar	
SWL (hr/sem)	175		
Module Level	1	Semester of Delivery	2
Administering Department	CyS	College	College of Computer Science and Information Technology
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	1/10/2023	Version Number	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	CyS101 Computer Programming I	Semester	1/Level 1
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1. Learn of programming languages provides added insight into other fields. 2. Understanding the practical and responsible use and management of program language is important for managers and other business knowledge workers in today's global information Society.
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	3. ensure the student understood the components of programming language and how all of these components work together to bring value to an organization. 4. turn students attention to the role that programming language plays in global information Society. 6. in this course we will cover basic concepts and techniques for programming including arrays and strings. 7. Why learn about loop types? - For..loop. - While..loop. - Do while loop. - Nested loop. 8. Why learn about series? 9. Why learn about Shape? 10. Why learn about strings? 11. Why Learn about functions? - Defining a Function, Function Declarations, Calling a Function, Function Arguments(Call by value, Call by Reference) 12. Why learn about Array? - One and Two-dimensional array.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Give the student the most important skills to become a Python power users have a broad understanding of Python language and they know which tool or function is best used in a given situation. 2. At the end of this course, students should be able to design, write and test a Python program to implement a working solution to a given problem. 3. Learn the most important skills to deal with loop types, functions, strings. 4. Students should be able to solve more complex and multifaceted problems using programming. This includes the ability to analyze problems, break them down into smaller components, and design and implement solutions. 5. Students should have a solid understanding of data structures (e.g., arrays, linked lists, trees, graphs) and algorithms (e.g., sorting, searching, recursion) and be able to apply them to solve a variety of programming challenges. 6. The students should be able to write clean, maintainable, and well-documented code.

Indicative Contents المحتويات الإرشادية	Indicative content includes the following: - <u>Principles of electronic</u> How can use a Python program, entering of variable types, basic input/output the statement, and type of operators. - <u>Shapes</u> If statement, nested if statement, For loop, nested for loop, while, and do while. - <u>Series</u> If statement, nested if statement, For loop, nested for loop, while, and do while. - <u>Function</u> Defining a Function, Calling a Function, Function Arguments(Call by value, Call by Reference) - <u>Strings</u> • Declaration, String function, Array of string - <u>Arrays</u> • One-dimensional array • Two-dimensional array

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	• The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. • Assess your students' prerequisite knowledge to ensure they have a solid understanding of programming fundamentals, which they should have acquired in a previous course.

	• Provide in-depth lectures on advanced programming topics. Encourage interactive discussions to explore the complexities of the subject matter. Use examples and code snippets to illustrate key concepts. • Incorporate coding exercises and projects that challenge students to apply advanced programming concepts, data structures, and algorithms. • Emphasize good software development practices, including code documentation, version control systems (e.g., Git), unit testing, and debugging techniques. • Assign both individual and group programming projects that require students to design and implement complex software applications. These projects should reflect real-world scenarios.
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Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	96	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6.4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation تقييم المادة الدراسية				
	Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome

Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #3
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #5, #6
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #6
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to Computer Programming II
Week 2	Loop type (break with continue)
Week 3	Series in Python
Week 4	Use Function with Series in Python
Week 5	Shape in Python
Week 6	Function with Shape in Python
Week 7	String in Python
Week 8	String function
Week 9	One dimension array
Week 10	One dimension array with search

Week 11	One dimension array with Sort
Week 12	One dimension array with Function
Week 13	Two-dimension array
Week 14	Two-dimension array with Array sort and search
Week 15	Two-dimension array with Function
Week 16	Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: execute many examples of Loop type
Week 2	Lab 2: execute many examples of Loop type (break with continue)
Week 3	Lab 3: execute many examples of Use Series in Python
Week 4	Lab 4: execute many examples of Use Series in Python
Week 5	Lab 5: execute many examples of Use Function with Series in Python
Week 6	Lab 7: execute many examples of Shape in Python
Week 7	Lab 8 execute many examples of Function with Shape in Python
Week 8	Lab 6: execute many examples of String
Week 9	Lab9: execute many examples of One dimension array
Week 10	Lab 10: execute many examples of One dimension array with a search
Week 11	Lab 11: execute many examples of One dimension array with a sort
Week 12	Lab 12: execute many examples of One dimension array with Function

Week 13	Lab 13:execute many examples of two dimension
Week 14	Lab 14: execute many examples of Two dimension array with a sort and search
Week 15	Lab15: execute many examples of Two dimension array with Function

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Python Programming by Adam Steward - 2022	No
Recommended Texts	Python Programming : An Introduction to Computer Science : Second Edition 2009	No
Websites	https://mrcet.com/downloads/digital_notes/CSE/III%20Year/PYTHON%20PROGRAMMING%20NOTES.pdf	

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A – Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C – Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E – Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Module 2

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Logic Design		Module Delivery	
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	CyB 108			
ECTS Credits	4			
SWL (hr/sem)	105			
Module Level	U	Semester of Delivery		
Administering Department	CyB	College	CSIT	
Module Leader		e-mail		
Module Leader's Acad. Title		Module Leader's Qualification		
Module Tutor	Name (if available)	e-mail	E-mail	
Peer Reviewer Name	Name	e-mail	E-mail	
Scientific Committee Approval Date	/ /2023	Version Number	1.0	

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	This course contributes primarily to the students' knowledge for working professionally in these areas of logic design. Students should be able to apply knowledge of science and engineering, as well as the techniques, skills, and modern engineering tools to analyze, design and optimize logic circuits. In addition, this course provides a modern introduction to logical design and the basic building blocks used in digital systems, in particular digital computers. The students will be introduced to introductory logic design, their principle of operation, analysis, and design. In sum, they will learn how to use this knowledge more easily tailor the degree of technology coverage, accommodating both electrical and computer engineering and computer science audiences.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	At the completion of the course, students will be able to: 1. Using number systems and it applies to the material of logic systems. 2. Be familiar with truth tables and how to use them for analysis and design. 3. Using switching algebra and the implementation of switching functions using the common gates AND, OR, NOT, NAND, NOR, Exclusive-OR, and Exclusive-NOR. 4. Simplification combinational logic circuits by using Karnaugh map. 5. Analyze and design combinational larger logic circuits. 6. Analyze sequential logic circuits. 7. Ability to analyze and design a system, component, or process to meet desired needs. 8. Ability to analyze, design and conduct experiments. 9. In addition to the measurable student learning outcomes listed above, the students will be able to demonstrate their knowledge of the course material by Analyze real problems through laboratory experiments. 10. The ability to apply their skills in a variety of practical sciences.

Indicative Contents

المحتويات الإرشادية

1. Number systems

- Positional number system.
- Binary digits(bits).
- Convert from binary to decimal.
- Decimal to binary.
- Hexadecimal (hex).
- Octal numbering systems.
- Converting between the four numbering systems (decimal, binary, Hex and octal).
- Fraction of number system.
- Signed and unsigned binary numbers.
- Two's complement, binary addition.
- Subtraction.
- Binary coded decimal (BCD) codes.
- ASCII code.
- Gray code.

2. Combinational Logic Circuits and switching algebra.

- Switching algebra.
- Properties of switching algebra.
- Development of a truth table.
- Manipulating algebraic functions.
- Sum of products (SOP).
- Product of sum (POS).

3. Switching algebra and logic gates.

- Implementation of switching functions using networks of AND gates.
- OR gates.
- NOT gates.
- DeMorgan's theorem.
- From truth table to algebraic expression.
- Exclusive-OR gates
- Simplifying algebraic expressions.
- Consensus operator.

4. Karnaugh map.

- Two, three, and four-variable Karnaugh map.
- Minimum SOP expressions using the Karnaugh map.
- Finding a minimum product of sums (POS) expression.

	• Five and six-variable Karnaugh map. • Economize by sharing gates. 5. Designing Combinational system. • Design 1-bit and 2-bits full adder design 1-bit subtractor. • Subtractor/ adder. • Comparators. • Binary decoders. • Binary encoder. • Multiplexe and Demultiplexe. 6. Analysis of sequential systems. • D, S-R, T. • J-K flip flops. • flip flop with clear and present inputs, timing for flip flop. • Moore model circuit. • Mealy model analysis.
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Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises through class and laboratory experiments. The objective of this module is to serve as a cornerstone for the learning of logic design, digital system design, and computer design by students. At the same time, discussion of combinational logic: logic gates, minimization techniques, arithmetic circuits, and modern logic devices such as field programmable logic gates. This will be accomplished through group discussions, classes, reports, feedback, assignments, and interactive tutorials and by considering types of simple experiments, and exercises that are interesting to the students.
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا

Structured SWL (h/sem)		Structured SWL (h/w)	
الحمل الدراسي المنتظم للطالب خلال الفصل	79	الحمل الدراسي المنتظم للطالب أسبوعيا	5

Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	63	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	10% (10)	2, 5, 8, and 12	LO#1-5
	Assignments	2	10% (10)	2 and 12	LO #1-6
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #3-5
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #5
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Number Systems.
Week 2	Number Systems.
Week 3	Number Systems.

Week 4	Number Systems.
Week 5	Combinational Logic Circuits and switching algebra.
Week 6	Combinational Logic Circuits and switching algebra.
Week 7	Switching algebra and logic gates.
Week 8	Switching algebra and logic gates.
Week 9	Switching algebra and logic gates.
Week 10	Mid-term Exam.
Week 11	Karnaugh map.
Week 12	Karnaugh map.
Week 13	Designing Combinational system.
Week 14	Designing Combinational system.
Week 15	Designing Combinational system.
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المناهج الاسبوعي للمختبر

	Material Covered
Week 1	Introduction to Logic circuit design software and installation method.
Week 2	Learning how to choose the appropriate software of in logic circuits design that are easy to use and have sustainability. Learning how to use interfaces of logic circuits design program.
Week 3	Introduction Logic Gates. AND Gate and Logic Diagram. Examples with Exercises.

Week 4	OR Gate and Logic Diagram. Examples with Exercises.
Week 5	NOT Gate and Logic Diagram. Examples with Exercises.
Week 6	NAND Gate and Logic Diagram. Examples with Exercises.
Week 7	NOR Gate and Logic Diagram. Examples with Exercises.
Week 8	XOR Gate and Logic Diagram. Examples with Exercises.
Week 9	XNOR Gate and Logic Diagram. Examples with Exercises.
Week 10	Logic circuits and solving problems. Drawing the truth table from a given logic circuit. Designing a logic circuit from a given problem and testing it by also drawing a truth table. Examples with Exercises.
Week 11	Boolean Algebra. Distributive Law. Rules of Boolean Algebra. Boolean Expression/Function. Examples with Exercises.
Week 12	De Morgan's Theorems. Examples: using Boolean Algebra techniques Learn how to Work in groups. Examples with Exercises.
Week 13	Standard Form of Boolean Expressions All Boolean expressions, regardless of their form, can be converted into two standard forms:

	▪ The sum- of – products form. ▪ The product –of- sums form. Examples with Exercises.
Week 14	How to construct Full -Adder from two Half –Adders with Logic circuit Examples with Exercises.
Week 15	Exercises in general. • Work in groups
Week 16	Preparatory week before the final Exam through test students.

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1. Textbook 1: M. Morris Mano.,” Digital Design”, Published by McGraw-Hill, 3rd edition (2004) 2. Morris Mano M, “Digital Logic and Computer Design”, Prentice Hall, New Delhi (2006). 3. Alan B. Marcovitz - Introduction to Logic Design, 3rd Edition -McGraw-Hill (2009). 4. Charles H. Roth Jr., Larry L Kinney - Fundamentals of Logic Design, 6th Edition-CL Engineering (2009).	Yes

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors

	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
(0 – 49)	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Module 3

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Coding and Information Theory نظرية معلومات و ترميز		Module Delivery
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	CyS109		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	1	Semester of Delivery	2
Administering Department	CyS	College	College of Computer Science and information Technology
Module Leader	Name	e-mail	E-mail
Module Leader's Acad. Title	Professor	Module Leader's Qualification	Ph.D.

Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	1/10/2023	Version Number	1.0

Module 4

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية			
Module Title	Cyber Security Principles مبادئ الامن السيبراني		Module Delivery
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	CyS109		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	1	Semester of Delivery	1
Administering Department	CyS	College	College of Computer Science and Information Technology
Module Leader	Name	e-mail	E-mail
Module Leader's Acad. Title	Professor	Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	01/10/2023	Version Number	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	The aim of this course is to equip students with a strong foundation in cybersecurity principles and practices. By the end of the course, students will have a deep understanding of cybersecurity concepts, be able to recognize and mitigate common security threats, and appreciate the ethical and legal aspects of cybersecurity.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of this course, students will: 1. Understand Cybersecurity Fundamentals: Gain a strong foundation in cybersecurity principles, terminologies, and concepts. 2. Identify Security Threats: Recognize common cybersecurity threats and vulnerabilities. 3. Implement Security Measures: Learn practical strategies and tools to secure digital systems and networks. 4. Analyze Security Incidents: Develop skills to investigate and respond to security incidents. 5. Promote Cybersecurity Awareness: Understand the importance of cybersecurity in today's digital world and promote best practices. 6. Incident Response and Recovery: Students should be capable of developing and implementing an incident response plan, as well as understanding the steps involved in responding to and recovering from cybersecurity incidents. 7. Legal and Ethical Considerations: Students should have an awareness of the legal and ethical aspects of cybersecurity, including compliance with relevant laws and regulations, ethical hacking, and the consequences of cybercrimes.
Indicative Contents المحتويات الإرشادية	The indicative contents of the "Cyber Security Principles" course include an introduction to cybersecurity fundamentals, exploration of the cyber threat landscape, information security principles, network security, cryptography, access control and

	authentication, incident response, and legal and ethical considerations. These topics collectively provide students with a holistic understanding of cybersecurity concepts and practices.
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Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The course employs a combination of teaching strategies, including lectures, interactive discussions, hands-on labs, and group projects. These strategies foster active engagement and practical application of cybersecurity principles, ensuring students grasp theoretical concepts while gaining valuable real-world experience. Additionally, guest lectures by industry experts and participation in cybersecurity-related events enhance students' exposure to current industry practices and challenges.
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Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	49	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	3.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	76	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 2, 3
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 5, 7
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Introduction to Cyber Security Definition and importance of cybersecurity.
Week 2	Historical development and evolution of cyber threats. Ethical and legal considerations in cybersecurity.
Week 3	Cyber Threat Landscape Types of cyber threats (e.g., malware, phishing, DDoS attacks).
Week 4	Understanding threat actors and motivations.
Week 5	Information Security Principles Confidentiality, integrity, and availability (CIA triad).
Week 6	Security policies, standards, and guidelines.
Week 7	Network Security Network security basics.
Week 8	Firewalls, intrusion detection systems (IDS), and intrusion prevention systems (IPS).
Week 9	Cryptography Principles of encryption and decryption.
Week 10	Cryptographic algorithms and protocols.
Week 11	Access Control and Authentication User authentication methods (e.g., passwords, multi-factor authentication).
Week 12	Role-based access control (RBAC) and permissions.
Week 13	Security Incidents and Response Identifying and responding to security incidents.
Week 14	Developing an incident response plan.
Week 15	Final Review and Examination

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab1: Introduction to Lab Environment Setting up the lab environment
Week 2	Lab 2: introduction to lab tools and resources.
Week 3	Lab 3: Vulnerability Assessment (Aligned with Cyber Threat Landscape)

	Conducting vulnerability scans.
Week 4	Lab 4: Identifying and prioritizing vulnerabilities.
Week 5	Lab 5: Network Monitoring (Aligned with Network Security) Monitoring network traffic and anomalies.
Week 6	Lab 6: Analyzing network logs and events.
Week 7	Lab 7: Ethical Hacking (Aligned with Ethical Hacking) Introduction to ethical hacking.
Week 8	Lab8: Performing ethical hacking exercises.
Week 9	Lab9: Incident Response (Aligned with Security Incidents and Response) Developing an incident response plan.
Week 10	Lab10: Identifying, analyzing, and mitigating security incidents.
Week 11	Lab11: Security Solutions (Aligned with Security Solutions) Configuring and deploying security solutions (e.g., firewalls, intrusion detection systems).
Week 12	Lab12: Conducting security assessments.
Week 13	Lab13: Group Projects (Aligned with Various Topics)
Week 14	Lab14: Collaborative group projects on cybersecurity scenarios.
Week 15	Lab15: Final Lab Review and Assessment (Aligned with Final Review and Examination)

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	"Cybersecurity: Principles and Practice" by William Stallings and Lawrie Brown	No
Recommended Texts	"Introduction to Computer and Network Security: Navigating Shades of Gray" by Timothy Shimeall and Jonathan Spring:	No
Websites		

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 – 100	Outstanding Performance
	B - Very Good	جيد جدا	80 – 89	Above average with some errors

	C - Good	جيد	70 – 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 – 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 – 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Module 5

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	English II إنكليزي		Module Delivery	
Module Type	Basic		☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	CyB 111			
ECTS Credits	3			
SWL (hr/sem)	75			
Module Level	1	Semester of Delivery	2	
Administering Department	CyB	College	CSIT	
Module Leader		e-mail		
Module Leader's Acad. Title	Professor	Module Leader's Qualification	Ph.D.	

Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	/ /2023	Version Number	1.0

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	CyB105	Semester	
Co-requisites module	None	Semester	
Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية			
Module Objectives أهداف المادة الدراسية	4. Developing communication approaches. 5. Enhancing total physical response (TPR). 6. Establishing multi-outcome learning (English and science knowledge for instance).		
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	10. Improved Communication Skills: Students should be able to communicate more effectively in English, expressing themselves with greater fluency and accuracy. They can participate in everyday conversations, express opinions, and discuss various topics. 11. Expanded Vocabulary: Learners should have developed a broader range of vocabulary, allowing them to understand and use a wider variety of words and expressions. 12. Grammar Proficiency: Students are expected to have a better grasp of English grammar, allowing them to construct more complex sentences and convey different tenses and aspects more accurately. 13. Reading Comprehension: Learners should be able to read and comprehend a variety of texts, such as articles, short stories, and excerpts from novels, with		

	a reasonable level of understanding. 14. Writing Skills: Students should be able to write coherent paragraphs and short texts, such as emails, letters, and simple essays, demonstrating improved sentence structure and organization. 15. Listening Skills: Learners should have developed better listening skills, allowing them to understand and follow conversations, interviews, and media in English with less difficulty. 16. Cultural Awareness: At this level, students may have been exposed to various cultural aspects of English-speaking countries, leading to a better understanding of cultural norms and customs. 17. Independent Learning: Students should be more confident and independent in their language learning journey, taking initiatives to practice and learn outside of the classroom. 18. Preparation for Advanced Levels: English Level II usually serves as a foundation for more advanced language courses. After completing this level, students should be ready to progress to higher-level language studies.
Indicative Contents المحتويات الإرشادية	International student: READING: Going abroad to study. • Following instructions: filling in forms • Reading methods: skim; scan; intensive reading; extensive reading WRITING: A host family • Checking your writing: error correction - punctuation and spelling • Writing an informal email Where in the world: READING: Three countries • Skimming and scanning: reading for the general idea, and for particular information WRITING: My country • Brain storming ideas: topic areas and examples; • completing a paragraph • Linking ideas (1): but, however, although

	• Writing a description of my country Newspaper articles: READING: An unexpected journey • Predicting content: using the title and the pictures • Meaning from context: guessing the meaning of new words WRITING My country • Brainstorming ideas: topic areas and examples; completing a paragraph • Linking ideas (1): but, however, although Writing a description of my country Modern technology: READING Innovation • Purpose and audience (1 and 2): using visual and written clues WRITING Mistaken identity • Sentences/Paragraphs; helping your writing flow • Varying the structure: making writing interesting Writing an article Conferences and visits READING: A conference in Istanbul • Purpose and audience (1 and 2): using visual and written clues WRITING Invitations • Using formal expressions: writing academic emails and letters • Writing a formal email Science and our world: READING: Air pollution • Making notes: organizing recording, and remembering important information • Interpreting meaning; recognizing fact and speculation WRITING Technology - good or bad? • Organizing ideas (1): planning the arguments for and against
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- Linking ideas (2): first, for instance, in conclusion ... Writing a discursive essay

People: past and present

READING: Three famous writers

- Using original sources: dealing with difficult language and
- unknown vocabulary

WRITING: Trends

- Paraphrasing and summarizing: using other sources
- Writing a summary

The world of IT:

READING: Computers

- Rephrasing and explaining; dealing with difficult scientific and
- technological words
- Avoiding repetition (2): pronouns and what they refer to

WRITING: IT - benefits and drawbacks

- Linking ideas (3): cause and result Coherent writing; writing up notes
- Writing from notes

Inventions, discoveries, and processes:

READING: How things work

- Intensive reading: strategies for focusing your reading
- Linking ideas (4); sequencing words to describe a process

WRITING How things are made

- The passive voice; writing in neutral style
- Clarifying a sequence: describing a process
- Writing a description of a process

Travel and tourism:

READING: International tourism

- Interpreting data: statistical information in graphs, charts, and texts

VOCABULARY DEVELOPMENT Varying vocabulary (2)

	• A voiding repetition (3): describing graphs using synonyms, adjectives + nouns, verbs + adverbs
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	For Teachers: 9. Interactive and Communicative Approach: Encourage students to engage in meaningful conversations, discussions, and role-plays. This approach emphasizes real-life communication and helps students practice using English in different contexts. 10. Error Correction: Provide constructive feedback on students' errors without discouraging them. Focus on correcting essential mistakes that hinder communication while praising their efforts to build confidence. 11. Contextual Learning: Use authentic materials like articles, videos, and short stories to introduce new vocabulary and grammar in relevant contexts. This helps students understand language usage in real-life situations. 12. Task-Based Learning: Design activities and tasks that require students to use English to complete meaningful projects or solve problems. This approach fosters critical thinking and language application skills. 13. Grammar in Context: Teach grammar points within the context of authentic texts or dialogues. This helps students see how grammar functions in real communication rather than just learning rules in isolation. 14. Encourage Reading: Assign reading materials suited to the students' proficiency level. Reading improves vocabulary, comprehension, and exposes students to different writing styles. 15. Listening Practice: Provide opportunities for listening exercises, such as watching English-language videos, movies, or podcasts. This enhances listening skills and exposes students to different accents and speech patterns. 16. Writing Practice: Assign writing tasks like essays, emails, or short stories. Provide feedback on their writing to improve their skills gradually.

	For Students: Consistent Practice: Regularly practice reading, writing, listening, and speaking in English. Consistency is crucial for improvement. Use Language Apps and Online Resources: Utilize language learning apps and online resources to reinforce learning, expand vocabulary, and improve grammar. Join Language Exchange Groups: Engage in language exchange programs or groups where you can practice speaking English with native speakers or other learners. Set Goals: Establish clear language learning goals and track your progress. Celebrate achievements and milestones. Immerse Yourself: Surround yourself with English as much as possible. Watch English movies, TV shows, and listen to English music or podcasts. Keep a Language Journal: Write down new words, expressions, and grammar rules you learn. Review and practice them regularly. Practice with Different Media: Practice English through various mediums like reading books, watching documentaries, listening to news, or participating in online forums. Be Patient and Persistent: Language learning takes time and effort. Stay motivated and persistent even if you encounter challenges
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Student Workload (SWL)			
الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	33	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	42	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.8
Total SWL (h/sem)	75		

الحمل الدراسي الكلي للطالب خلال الفصل	
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Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #10,
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Report	1	20% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	International student
Week 2	Where in the world
Week 3	Newspaper articles
Week 4	Conferences and visits
Week 5	Science and our world
Week 6	Midterm exam
Week 7	People: past and present

Week 8	The world of IT
Week 9	Inventions, discoveries, and processes
Week 10	Travel and tourism
Week 11	Final exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Sarah Philpot. Headway: Academic skills- reading, writing, and study skills. LEVEL 2 Student's Book. Oxford.	Yes
Recommended Texts		
Websites		

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

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Module 6

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Probability and Statistics		Module Delivery
Module Type	Basic		☒ Theory ☒ Lecture ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	CyB112		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	1	Semester of Delivery	2
Administering Department	CyS	College	College of Computer Science and Information Technology
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	01/06/2023	Version Number	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	Calculus	Semester	1
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Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1. It gives the student a broader idea of the possibility of things happening. 2. The probability of things gives more opportunity for imagination. 3. The moment- generating function gives him more opportunity to deal with the derivative of the moment- generating function. 4. The student will be qualified in the next stage to deal with probability and statistics, especially in the subject of simulation.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understand the vocabulary of probability and statistics. 2. Understanding the nature of statistics as an integrated system of knowledge. 3. The ability to solve complex statistical problems. 4. Be able to choose appropriate statistical tests and methods based on the characteristics of the data and research questions. 5. Develop a solid understanding of probability theory, including the rules of probability, probability distributions, random variables, and the concept of expected value. 6. Learn to interpret and visualize data effectively through techniques like graphs, charts, and summary statistics. 7. Apply probability concepts to real-world situations, such as understanding uncertainty in various contexts. 8. Apply these principles to make inferences about populations based on sample data, such as estimating population parameters and testing hypotheses. 9. Develop critical thinking skills to assess the validity and relevance of statistical analyses and their implications. 10. Apply statistical reasoning to make informed decisions in various fields, such as business, science, social sciences, and healthcare.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following.

	Part A – permutations and combinations Permutations mean dealing with ordered things, but harmonics, the order is unimportant. Part B- Probability Probability is a measure of the possibility of an event occurring. Probability is measured as a number between zero and one, where zero indicates impossibility and one indicates certainty. The higher the probability of an event, the greater the possibility of that event occurring. Part C- Distributions Connected and discrete distributions and how to deal with them.
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Teaching a course in probability and statistics can be challenging due to the abstract nature of the subject and the need to engage students in both theory and practical applications. Here's a strategy for effectively teaching a probability and statistics course: • Set Clear Learning Objectives: Begin by defining specific learning objectives for the course. What should students be able to understand and do by the end of the course? Clearly communicate these objectives to students. • Use Real-Life Examples: Start with relatable, real-world examples to introduce concepts. Relating statistics to everyday situations helps students see the practical relevance of the subject. • Build a Strong Foundation: Begin with the fundamentals. Ensure that students have a solid grasp of basic probability theory and concepts before moving on to more advanced topics in statistics. • Encourage Active Learning: Engage students actively through problem-solving, group discussions, and hands-on activities. Encourage them to explore and experiment with data.

- **Provide Context:**

Give context to statistical methods by showing their relevance in various fields, such as business, science, healthcare, and social sciences.

- **Use Technology:**

Leverage statistical software (e.g., R, Python, Excel) for practical data analysis. Teach students how to use these tools to analyze and visualize data.

- **Emphasize Critical Thinking:**

Encourage students to think critically about statistical claims and interpretations. Teach them how to assess the validity and reliability of statistical results.

- **Teach Data Visualization:**

Emphasize the importance of data visualization. Show students how to create clear and informative graphs and charts to communicate data effectively.

- **Assess Progress:**

Use a variety of assessment methods, including quizzes, assignments, projects, and exams, to evaluate students' understanding and application of statistical concepts.

- **Provide Feedback:**

Offer constructive feedback on assignments and assessments. Encourage self-assessment and reflection to support continuous improvement.

- **Encourage Collaboration:**

Promote collaboration among students by assigning group projects and facilitating peer-to-peer learning. Encourage them to discuss and solve problems together.

- **Relate to Research:**

Highlight the role of statistics in research, emphasizing the importance of designing experiments, collecting data, and drawing valid conclusions.

- **Solve Real-World Problems:**

Present students with real-world problems or case studies that require the application of statistical methods to find solutions. This can help them see the practical utility of statistics.

- **Foster Ethical Data Handling:**

	Discuss ethical issues related to data collection, analysis, and reporting. Teach students the importance of respecting privacy and transparency in statistical work. Adapt to Student Needs: Be flexible and adapt to the needs of the students. Encourage questions and provide additional support for students who may be struggling.
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Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	4.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	86	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	5.7
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 2, 10
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6
	Projects	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-10
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الأسبوعي النظري

	Material Covered
Week 1	Introduction - permutations and combinations
Week 2	Probability
Week 3	Conditional probability and bay's theorem
Week 4	Connected random variables
Week 5	Discrete random variables
Week 6	Functions of random variables
Week 7	Expectations
Week 8	Variances
Week 9	Moment – generating function
Week 10	Joint distributions and marginal distributions
Week 11	Discrete distributions
Week 12	Continuous distributions
Week 13	First exam
Week 14	Second exam
Week 15	Review important topics
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	كتاب سلسلة من الاحتمالات تأليف سيمور ليبشتز	Yes
Recommended Texts	كتاب مقدمة في الإحصاء الرياضي تأليف الدكتور صباح داود سليم	yes
Websites	Adobe reader-[simue-pdf] Probability et statistique cours et problemes series schaum	

Grading Scheme

مخطط الدرجات				
Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

Curriculum for the second Year, First Semester.

Module 1

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information		
معلومات المادة الدراسية		
Module Title	هياكل بيانات Data Structures	Module Delivery
Module Type	Core	☒ Theory ☒ Lecture ☒ Lab
Module Code	CyB 202	
ECTS Credits	6	

SWL (hr/sem)	175		☐ Tutorial ☒ Practical ☐ Seminar	
Module Level	2	Semester of Delivery	1	
Administering Department	CyB	College	CSIS	
Module Leader		e-mail		
Module Leader's Acad. Title	Assist lec.	Module Leader's Qualification	PHD	
Module Tutor	Atman Dhiya Abdulsatar	e-mail	Athman.dhiya@uobasrah.edu.iq	
Peer Reviewer Name	Name	e-mail	E-mail	
Scientific Committee Approval Date	/0/2023	Version Number	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	Semester	
Co-requisites module		Semester	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	20. To know what meaning of data structures in computer science and its classification. 21. To understand how each data structure store in memory. 22. To understand how access to each data structure that store in memory. 23. To perform basic operation on each data structure.

	24. To implemented each data structure by using any programming language.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. It provides what mean of data type and data structures. 2. Identify classification of data structures and the main operation of them. 3. Identify on arrays and discuss the features, main operations, how access to each element and how implementation in java. 4. Identify on how representation strings and how create string object in pyhon. 5. Identify on linked lists and discuss the features, main operations, types and how implementation in java. 6. Identify on stacks and discuss the features, main operations, applications, how implementation in pyhon using arrays and linked lists. 7. Discuss how conversation and evaluation the expression using stack. 8. Learn how write implantation recursion function by using stack. 9. Identify on queues and discuss the features, main operations, applications, how implementation in python using arrays and linked lists.
Indicative Contents المحتويات الإرشادية	Many points will be covered such as: 1. Introduction to Data Structures (Definition and importance of data structures, Basic terminology: data, information, algorithm, etc. , Overview of different types of data structures). 2. Arrays (Definition and properties, Array operations: access, insertion, deletion, Multi-dimensional arrays). 3. Linked Lists (Singly linked lists, doubly linked lists, circular linked lists, Basic operations: insertion, deletion, traversal, Applications of linked lists). 4. Stacks (Definition and properties, Operations: push, pop, peek, Implementation using arrays and linked lists, Applications of stacks). 5. Queues (Definition and properties, Operations: enqueue, dequeue, front, rear, Implementation using arrays and linked lists, Types of queues (e.g., circular queue, priority queue). 6. Trees (Binary trees, binary search trees (BST), Tree traversal: in-order, pre-order, post-order, Operations on binary trees: insertion, deletion, searching). 7. Graphs (Definition and basic terminology (vertices, edges), Types of graphs

	(directed, undirected, weighted), Graph representation , (adjacency matrix, adjacency list). 8. Hashing (Hash functions and their properties, Collision resolution techniques, Applications of hashing). 9. Sorting (Comparison-based sorting algorithms (e.g., bubble sort, selection sort, insertion sort, merge sort, quicksort), Non-comparison-based sorting (e.g., counting sort, radix sort). 10. Searching (Linear search, binary search, Searching in trees and graphs). 11. Advanced Data Structures (Heaps and priority queues, Disjoint-set data structure (Union-Find), Trie data structure, B-trees). 12. Algorithm Analysis (Time complexity and space complexity analysis, Big-O notation, Best, average, and worst-case analysis). 13. Dynamic Programming (Principles of dynamic programming, Memoization and tabulation, Examples of dynamic programming problems). 14. Greedy Algorithms (Principles of greedy algorithms, Examples of greedy algorithmic problems). 15. Graph Algorithms (Shortest path algorithms (Dijkstra's, Bellman-Ford). , Minimum spanning tree algorithms (Prim's, Kruskal's).
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes and the lab, interactive tutorials, and by considering types of simple experiments involving some sampling activities that are interesting to the students. Different strategies will be utilized to encourage students participation and enhance learning abilities such as (class participation, quizzes, projects, and presentations).

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	77	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5.13
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	73	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.86
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	1	10% (10)	5	LO #3- #5 and #7
	Assignments	2	10% (10)	3 and 7	LO #8, #9
	Projects / Lab.	1	10% (10)	14	LO #3- #9
	Report	1	10% (10)	-	
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #6
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction - Types of Data types, type of data structures
Week 2	Arrays DS: definition, features, logic, physical structure, access equations of one dimensional array.
Week 3	Arrays DS: logic, physical structure, access equations of two dimensional arrays.
Week 4	Arrays DS: logic, physical structure, access equation of three and multi-dimensional arrays and triangle arrays.
Week 5	Strings DS: definition, basic representations in memory, create String object
Week 6	Linked Lists DS: definition, advantage and disadvantage of arrays and linked lists, basic operations of linked lists, types of linked lists.
Week 7	Mid-term Exam
Week 8	Implementation of linked lists
Week 9	Stack DS: definition, features, implementation using linked lists and Arrays
Week 10	Stack DS: Application-recursion
Week 11	Stack DS: Application- Expression Conversion
Week 12	Stack DS: Application- evaluating expressions
Week 13	Queue DS: definition, features, implementation using linked lists
Week 14	Queue DS: definition, features, implementation using Arrays
Week 15	Queue DS: types of queues
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
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Week 1	Arrays classes in python package
Week 2	Tasks in Arrays
Week 3	Strings methods in python package
Week 4	Tasks in Strings
Week 5	1st Quiz
Week 6	Linked Lists class in python package
Week 7	Tasks in linked lists (single and circular linked lists)
Week 8	Tasks in linked lists (double and Circular Double Linked Lists)
Week 9	Stack class in python package
Week 10	Stack to evaluate expression
Week 11	2nd Quiz
Week 12	Stack class in python package
Week 13	Implement queue using arrays
Week 14	Implement queue using linked lists
Week 15	Exercices of queue

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1. Data Structures and Algorithms in Java by Michael T. Goodrich, 2022. 2. A Textbook of Data Structures and Algorithms by G. A. Vijayalakshmi Pai, 2022	No

Recommended Texts	Hands-On Data Structures and Algorithms with Python by Dr. Basant Agarwal , 2022	No
Websites		

Grading Scheme				
مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A – Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C – Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E – Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

Module 2

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية

Module Title	Object Oriented Programming I		Module Delivery		
Module Type	Core		☒ Theory ☐ Lecture ☒ Lab ☒ Tutorial ☐ Practical ☐ Seminar		
Module Code	CyB 201				
ECTS Credits	7				
SWL (hr/sem)	175				
Module Level		2			Semester of Delivery
Administering Department		CyB	College	CSIS	
Module Leader			e-mail		
Module Leader's Acad. Title		Lecturer	Module Leader's Qualification		MSc
Module Tutor	Name (if available)		e-mail	E-mail	
Peer Reviewer Name		Name	e-mail	E-mail	
Scientific Committee Approval Date		9/8/2024	Version Number	2.0	

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Computer Programming II	Semester	2
Co-requisites module	Object Oriented Prpgramming II	Semester	4

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	25. Introduce the concepts of object-oriented programming in a higher-level programming language, such Java, and Python. 26. Analyze a problem statement to design a model of objects necessary to create software architecture. 27. Gain skills in designing, and programming software for reuse of code. 28. Establish development methods in object-oriented programming to qualify students for teaching the language in other settings.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understanding the basic concepts of Object Oriented Programming. 2. Developing the basic structures of Classes and Objects. 3. Using Constructors and Deconstructors and methods in Python. 4. Learning the basic concepts of Encapsulation. 5. Implementing Polymorphisim in Python. 6. Implementing Inheritance in Python. 7. Learning the basic concepts of Abstraction. 8. Manage object relationships. 9. Understanding the basics about using magic methods. 10. Understanding of Exceptions in OOP.
Indicative Contents المحتويات الإرشادية	1. Introduction to OOP concepts. - What is Object-Oriented Programming? - Key OOP principles: Encapsulation, Abstraction, Inheritance, and Polymorphism. - Benefits of OOP. 2. Classes and Objects. - Understanding Classes and Objects. - Define a Class in Python. - Creating Objects (instances) from a class. - Using constructor. 3. Attributes and Methods. - Instance Attributes and Class Attributes.

	- Using Methods. 4. Encapsulation. - Public, Private, and Protected access modifiers. - Getter, and Setter methods. 5. Inheritance. - The concepts of Inheritance (parent and child). - Overriding method. - Super() method. 6. Polymorphisim. - Polymprphisim with inheritance. - Polymorphisim with functions and objects. 7. Abstraction. - The concept of Abstraction. 8. Magic Methods. - Understanding Magic methods. 9. Error Handling in OOP. - Exception handing in Python.
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in this module through a series of lectures the theoretical underpinnings of meaning of object oriented programming language (such as java) and it concepts. This will be achieved through of theoretical lectures in classes and projects in lab, there many assessment that increase the activities and understanding of students: 1. There are a number of quizzes that assess the student's competency in end of each topic. 2. There is a midterm class test. 3. There are take-home mini-projects by a team of 2 students.

4. There are end-of-semester exam test.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	96	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6.4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	4 and 8	LO #1- #10
	Lab.	2	10% (10)	6 and 10	LO #1- #10
	Projects	1	10% (10)	6 and 14	LO #1- #10
	Discuss.	1	10% (10)	5 and 12	LO #1- #10
Summative assessment	Midterm Exam	2hr	10% (10)	8	LO #1 - #6
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to Object-oriented programming (OOP). - Overview of OOP. - Basics of OOP (class and object). - First program based OOP.
Week 2	Attributes and Methods. - Instance variables, and methods. - Constructor in Python.
Week 3	Attributes and Methods. - Instance variables, and methods. - Constructor in Python. - Keyword (self).
Week 4	Attributes and Methods. - Instance variables, and methods. - Constructor in Python. - Keyword (self). - Class variables and methods.
Week 5	Encapsulation (private, protected, public access modifiers)
Week 6	Encapsulation (private, protected, public access modifiers)
Week 7	Abstraction (Abstraction and why it is important).
Week 8	Mid-term Exam
Week 9	Inheritance (Basic inheritance examples).

Week 10	Inheritance (Overriding methods).
Week 11	Polymorphism - What is polymorphism? - Polymorphism (functions and objects).
Week 12	Introduction to magic methods - (<code>__str__</code>, <code>__len__</code>, <code>__repr__</code>,....) - Customizing behavior with magic methods.
Week 13	Composition and Aggregation - Difference between composition and inheritance. - Using composition to reuse code.
Week 14	OOP: Abstract Classes and Interfaces - Abstract classes and methods. - Defining and using interface.
Week 15	OOP: Abstract Classes and Interfaces (Abstract base classes versus interface).

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Python class, and object creation, class attributes, and methods.
Week 2	Implement class (and instance) with attributes and methods.
Week 3	Implement class (constructor).
Week 4	Class with (self), and variables, and methods.
Week 5	1st Quiz

Week 6	Excercises on Encapsulation (private, protected, public access modifiers)
Week 7	Excercises on Encapsulation (private, protected, public access modifiers)
Week 8	Implementing Abstraction using property.
Week 9	Basic examples in inheritance.
Week 10	Inheritance and overriding.
Week 11	2nd Quiz
Week 12	Examples about polymorphisim.
Week 13	Simple examples using magic methods.
Week 14	Examples about composition.
Week 15	Abstract and interface.

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Python Object-Oriented Programming - Fourth Edition, Steven F. Lott, Dusty Phillips, 2021.	No
Recommended Texts	- Fluent Python, Luciano Ramalho, 2015. - "Object-Oriented Python: Master OOP by Building Games and GUIs", Irv Kalb, 2022.	No
Websites		

Grading Scheme مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A – Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C – Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E – Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Module 3

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية		
Module Title	Computation Theory	Module Delivery
Module Type	Core	☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☐ Practical
Module Code	CyB 203	
ECTS Credits	5	
SWL (hr/sem)	125	

		☐ Seminar	
Module Level	2	Semester of Delivery	1
Administering Department	CyB	College	CSIS
Module Leader		e-mail	
Module Leader's Acad. Title	Assist Proff	Module Leader's Qualification	PHD
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	Semester	
Co-requisites module		Semester	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	29. Understand the abstract model of computation. 30. Understand the formal reasoning and the ability to build a base for solving problems. 31. The ability to understand the problems and find if they can solved using computation. 32. Understand the computation models, and their properties.

	33. Learn the necessary mathematical techniques to prove the attributes of the computation models. 34. The ability to express the problems mathematically and find the proof to solve them. 35. Explore different (current and future) topics in the field of computation theory.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	11. Explain the basic concepts in computational theory through a set of tools. 12. Acquiring skills in addressing the mathematical problems and proof the solution. 13. Acquiring basic skills as an introduction to language construction. 14. Acquiring theoretical concepts to deal with (RE's, DFA's, NFA's, Stack's, Turing machines, and Grammars). 15. The ability to design (FAs, NFAs, Grammars, language modeling, small compilers basics). 16. The ability to think about addressing the problem according to certain rules. 17. The ability to distinguish between Natural and Formal Languages. 18. The logical thinking to formulate the problems and solutions.
Indicative Contents المحتويات الإرشادية	
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through: - Readings, self-learning, discussion panels. - Exercises and activities in the classroom. - Directing students to some websites to benefit from them to develop their capabilities.

	- Holding research seminars through which some problems are explained and analyzed and the mechanism for finding solutions to them.
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	62	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4.1
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	63	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	All
	Assignments	2	20% (20)	2 and 12	LO #2, #4 and #5, #8
	Projects / Lab.	-	-	-	-
	Report	1	10% (10)	13	LO #1, #3, #6 and #7
Summative assessment	Midterm Exam	2hr	10% (10)	7	All
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to languages (set,string,alphabets, language).
Week 2	Introduction to FAs (Finite state automata).
Week 3	FAs (Types of NFAs,DFAs and equivalence between NFAs and DFAs, FAs with epsilon move).
Week 4	Introduction to Regular Expressions.
Week 5	Regular Expressions (Pumping lemma on regular languages, closure properties of regular languages).
Week 6	FAs with outputs (Finite State Automata with output(Mealy and Moore) Machine).
Week 7	FAs with outputs (Equivalence between Moore and Mealy Machine).
Week 8	Represent REs, FAs, TGs (leens Theorem)
Week 9	Introduction to CFGs (Context Free Grammar and Languages)
Week 10	CFGs (Context Free Grammar without empty string).
Week 11	CFGs (Derivation Tree (LMD,RMD), Simplification of CFGs).
Week 12	CFGs (Chomsky and Greibach normal form).
Week 13	CFGs (The ambiguous CFGs).
Week 14	Pushdown automata and CFL, closure properties of CFL(union,concatenation,kleen closure)
Week 15	Turing Machine
Week 16	Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Introduction to the Theory of Computation (3rd Edition), by Michael Sipser.	No
Recommended Texts	An Introduction to Formal Languages and Automata (6th Edition), by Peter Linz.	No
Websites		

Grading Scheme				
مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A – Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C – Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E – Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

Module 4

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information					
معلومات المادة الدراسية					
Module Title	Database Principle		Module Delivery		
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☒ Practical ☐ Seminar		
Module Code	CyB 204				
ECTS Credits	6				
SWL (hr/sem)	150				
Module Level		2	Semester of Delivery		1
Administering Department		CyB	College	CSIS	
Module Leader			e-mail		
Module Leader's Acad. Title		Assist Proff	Module Leader's Qualification		PHD
Module Tutor	Name (if available)		e-mail	E-mail	
Peer Reviewer Name		Name	e-mail	E-mail	
Scientific Committee Approval Date		/0/2023	Version Number	1.0	

Relation with other Modules				
العلاقة مع المواد الدراسية الأخرى				
Prerequisite module	None		Semester	
Co-requisites module			Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1. Understand the structure of Database and database users. 2. Learning the Database concepts and database architecture. 3. The ability to implement data modeling with ER model, 4. Understand the relational model, database language and management systems. 5. Learn the relational data model, constraints (integrity), and relational algebra. 6. Learn the basics of SQL language. 7. Understand the database design, theory and methodology. 8. Learn different concepts such as (functional dependencies and normalization, relational database design algorithm).
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Describe database concepts and architecture including query processing and optimization, concurrency controls and database recovery. 2. Identify database requirements and constraints to solve a business problem. 3. Design logical and mathematical models to organize data within a database. 4. Develop databases and execute queries using SQL. 5. Analyze functional dependencies and apply normalization rules to minimize redundancy. 6. Develop skills to work in a group project to produce quality deliverables. 7. Develop skills to structure themselves to work in a cohesive manner.
Indicative Contents المحتويات الإرشادية	• Introduction to Databases • Conceptual Database Design • Entity Relationship Diagram • Enhanced ER (EER) Model Concepts (ERD) • Relational Data Model and Relational Database Constraints • Relational Algebra • Normalization • Structured Query Language (SQL) • Advanced SQL • File Structure and Indexes • Database Performance Issues

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes and the lab, interactive tutorials, and by considering types of projects, reports, quizzes and presentations.
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	77	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5.13
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	73	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.68
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	20% (20)	4 and 12	LO #1- #4 and #7
	Assignments	2	10% (10)	6 and 12	LO #4, and #5
	Projects / Lab.	1	10% (10)	14	LO #1- #7
	Report	-	-	-	-

Summative assessment	Midterm Exam	2hr	10% (10)	9	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Databases
Week 2	Conceptual Database Design
Week 3	Entity Relationship Diagram (ERD)
Week 4	Enhanced ER (EER) Model Concepts
Week 5	Relational Data Model and Relational Database Constraints
Week 6	Relational Algebra-- 1st Assignment
Week 7	Structured Query Language (SQL)
Week 8	Advanced SQL
Week 9	Midterm Exam
Week 10	Normalization
Week 11	File Structure and Indexes
Week 12	Database Performance Issues -
Week 13	2nd Assignment
Week 14	Mini-project evaluation

Week 15	Review and Exam Preparation: a review of key topics and concepts, exam practice, and preparation
Week 16	Final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Introduction to MS-Access
Week 2	Tables Design
Week 3	Tables Relationships
Week 4	Forms
Week 5	1st Quiz
Week 6	Queries1
Week 7	Queries2
Week 8	Mini-Project Projects Evaluation
Week 9	Reports
Week 10	2nd Quiz
Week 11	Switchboard and user interface
Week 12	Macro's and VBA
Week 13	Finalizing Database System
Week 14	Final-Project Projects Evaluation
Week 15	

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	[1] Kroenke, David, and David J. Auer. Database concepts. Prentice Hall, 2013. [2] Silberschatz, Abraham, Henry F. Korth, and S. Sudarshan. Database system concepts. 4th edition. Hightstown: McGraw-Hill, 2002 ISBN 0-07-255481-9. [3] Elmasri, Ramez., Fundamentals of database systems / Ramez Elmasri, Shamkant B. Navathe.—6th ed.,p. cm. ISBN-13: 978-0-136-08620-8	No
Recommended Texts	Bagui, S. & Earp, R (2004). Learning SQL A Step-by-Step Guide Using Access®. Addison-Wesley Publishing. ISBN: 0-32-111904-5.	No
Websites		

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A – Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C – Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E – Sufficient	مقبول	50 - 59	Work meets minimum criteria

Fail Group	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
(0 – 49)	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Module 5

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

1. Course Name:	
Static Websites Programming	
2. Course Code:	
CyB 205	
3. Semester / Year:	
2 ND year	
4. Description Preparation Date:	
10/9/2025	
5. Available Attendance Forms:	
Daily Attendance Sheet	
6. Number of Credit Hours (Total) / Number of Units (Total):15	
7. Course administrator's name (mention all, if more than one name)	
Name: Lamia Ali Abdulzahra Email:lamia.ali@uobasrah.edu.iq	
8. Email: Course Objectives	
Course Objectives	The objectives of this program are to:

	• Build Foundational Web Development Skills ○ Provide students with a strong understanding of HTML, CSS, and JavaScript as the core building blocks of modern web development. • Enable Practical Application ○ Equip students to design, develop, and publish functional, interactive, and visually appealing websites. • Promote Best Practices ○ Develop awareness of web standards, accessibility guidelines, responsive design principles, and coding conventions. • Foster Problem-Solving and Creativity ○ Encourage students to apply logical thinking and creativity in solving design and programming challenges. • Prepare for Advanced Learning and Careers ○ Lay the groundwork for advanced courses in web technologies, software development, and related fields. ○ Provide transferable skills relevant to the professional world, such as teamwork, critical thinking, and digital literacy.
9. Teaching and Learning Strategies	
Strategy	The <i>Web Programming I</i> course adopts a variety of teaching and learning strategies to ensure students develop both theoretical understanding and practical skills: 1. Lectures (Theory Delivery) ○ Provide foundational knowledge of HTML, CSS, and JavaScript. ○ Use multimedia presentations and live coding demonstrations. 2. Hands-On Laboratory Sessions ○ Conduct practical exercises in computer labs to apply lecture concepts. ○ Guide students through coding tasks, debugging, and small projects. 3. Project-Based Learning (PBL) ○ Assign individual and group projects (e.g., building a personal portfolio site). ○ Encourage creativity, problem-solving, and application of best practices.

	4. Active and Collaborative Learning ○ Use pair programming, group discussions, and peer code reviews. ○ Encourage teamwork and knowledge sharing. 5. E-Learning and Online Resources ○ Integrate Learning Management Systems (LMS) for assignments, quizzes, and resources. ○ Provide supplementary tutorials, coding sandboxes (e.g., CodePen, JSFiddle), and video lessons. 6. Formative Assessments and Feedback ○ Use short quizzes, coding exercises, and in-class activities for continuous evaluation. ○ Provide timely feedback to help students improve progressively. 7. Self-Directed Learning ○ Encourage students to explore web development tools, online documentation, and communities. ○ Promote independent problem-solving and lifelong learning habits. 8. Demonstrations and Case Studies ○ Showcase real-world websites and applications to highlight best practices. ○ Analyze case studies of good vs. poor web design and coding practices.
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10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Understand course overview and web development basics	Introduction to Web Programming & Internet Concepts	Lecture + Discussion	Participation
2	3	Describe HTML structure and basic tags	HTML Basics: Elements, Headings, Paragraphs, Links	Lecture + Lab	Quiz + Lab exercises

3	3	Create structured web pages with lists, images, and tables	HTML Lists, Images, Tables	Lecture + Lab	Lab exercises
4	3	Implement forms and input controls	HTML Forms and Input Elements	Lecture + Lab	Lab exercises + Quiz
5	3	Apply CSS styling to HTML elements	CSS Basics: Selectors, Properties, Colors	Lecture + Lab	Lab exercises
6	3	Design page layout using CSS	CSS Box Model, Margins, Padding, Borders	Lecture + Lab	Lab exercises
7	3	Implement advanced CSS styling and positioning	CSS Positioning, Flexbox, Grid	Lecture + Lab	Lab exercises + Quiz
8	3	Apply learned concepts in a small project	Midterm Project: Simple Web Page	Project-Based Learning	Midterm Project Evaluation
9	3	Add interactivity with JavaScript	JavaScript Basics: Variables, Data Types, Operators	Lecture + Lab	Lab exercises

10	3	Control program flow using conditions and loops	JavaScript: Conditionals & Loops	Lecture + Lab	Lab exercises
11	3	Manipulate web page elements dynamically	JavaScript DOM Manipulation	Lecture + Lab	Lab exercises
12	3	Handle events and validate forms	JavaScript Events & Form Validation	Lecture + Lab	Lab exercises + Quiz
13	3	Apply functions and arrays in JavaScript	JavaScript Functions & Arrays	Lecture + Lab	Lab exercises
14	3	Integrate HTML, CSS, and JavaScript in a full project	Capstone Project Development	Project-Based Learning	Project Progress Evaluation
15	3	Present final projects and review all topics	Capstone Project Presentation & Course Review	Presentation + Discussion	Final Project Evaluation + Participation
11. Course Evaluation					
• Continuous Assessment: Quizzes and lab exercises are conducted weekly to provide timely feedback and track progress. • Project-Based Assessment: Both midterm and final projects assess students' ability to integrate theory into practical web development tasks. • Participation: Students are encouraged to actively engage in labs, discussions, and peer reviews.					

Flexibility: Evaluation methods may be adjusted to suit online or blended learning environments, ensuring fairness and accessibility.	
12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	
Main references (sources)	"JavaScript for Modern Web Development: Building a Web Application Using HTML, CSS, and JavaScript" <i>Publisher:</i> Skillsoft, 2020 <i>Overview:</i> Complete guide for learning web development from basics to building a web application using HTML, CSS, and JavaScript.
Recommended books and references (scientific journals, reports...)	"JavaScript: The Definitive Guide, 7th Edition" <i>Author:</i> David Flanagan <i>Publisher:</i> O'Reilly Media, 2020 <i>Overview:</i> Complete reference for JavaScript covering the latest features and best practice
Electronic References, Websites	W3Schools <i>Description:</i> Educational website with interactive tutorials and examples for HTML, CSS, and JavaScript. <i>Link:</i> W3Schools

Module 6

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية		
Module Title	Arabic Language II	Module Delivery
Module Type	Support	☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☐ Practical
Module Code	UOB204	
ECTS Credits	2	

SWL (hr/sem)	50	☐ Seminar	
Module Level		Semester of Delivery	
Administering Department		College	
Module Leader	م.م. هديل سالم كاطع	e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	توضح هذه المادة للطالب أساسيات اللغة العربية والتعرف أيضاً على أهم ادباء العرب ، إضافة إلى بيان أهمية اللغة العربية كونها لغتنا الأساسية.	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	إكساب الطلبة المعارف و المعلومات المناسبة في اللغة العربية وآدابها، وتنمية الذائقة اللغوية و الأدبية لدى الطلبة على مايسمعون أو يقرؤون وكذلك تعزيز مهارات البحث العلمي في مجالات اللغة و الأدب، إضافة إلى إكساب الطلاب مهارات التعبير بالفصحى ، وتنمية الاتجاهات والقيم الإيجابية لدى الطلاب نحو لغتهم العربية المرتبطة بالدين والتراث العربي.

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	مخرجات التعلم لمادة اللغة العربية تهدف إلى تطوير مجموعة من المهارات و المعرفة لدى الطلاب، ادناه بعض مخرجات التعلم الرئيسية بعد انتهاء دراسة هذه المادة: 1-شرح القواعد الأساسية للكتابة في مادة اللغة العربية. 2-تطبيق المعارف اللغوية بمهارة ويسر 3-تحليل التراكيب اللغوية والنصوص البسيطة التي يستعملها في حياته اليومية 4-معالجة الأخطاء البسيطة لديه
Indicative Contents المحتويات الإرشادية	1-نشر اللغة العربية بين أفراد المجتمع عموماً لفتح آفاق جديدة لتطوير المهارات اللغوية و دعهما. 2-التحديات المختلفة التي تواجه المجتمع على صعيد التربية والتعليم و لاسيما في مجال تدريس اللغة العربية. 3-الإفادة من وسائل الاتصال الحديثة كالانترنت و غيرها في عملية التعلم.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1-لقاء المحاضرات بشكل تفصيلي. 2-كتابة التقارير. 3-مناقشة يومية لمعرفة مدى استيعاب الطلبة للمادة ووضع تقييم للمشاركات اليومية. 4-امتحانات يومية (كوزات) و امتحانات شهرية للمنهج الدراسي والامتحان النهائي.

Student Workload (SWL) الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل		Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل		Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	

Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	
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Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	15% (15)	5 and 10	LO #1, #2 and #10
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Report	1	15% (15)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	مفهوم اللغة
Week 2	أهمية اللغة ونشأتها
Week 3	المصطلح العلمي 1
Week 4	المصطلح العلمي 2
Week 5	المعاجم 1

Week 6	المعاجم 2
Week 7	عصر النهضة
Week 8	رواد عصر النهضة
Week 9	ادب عصر النهضة
Week 10	الاستشراق
Week 11	نقد الاستشراق
Week 12	ادب الاستشراق
Week 13	تقارير
Week 14	كوز
Week 15	الامتحان النهائي
Week 16	

Delivery Plan (Weekly Lab. Syllabus)	
المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	شرح ابن عقيل، ديوان المتنبي، تاريخ الادب العربي	
Recommended Texts		
Websites		

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Curriculum for the second Year, Second Semester.

Module 1

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Object Oriented Programming II		Module Delivery	
Module Type	Core		☒ Theory ☐ Lecture ☒ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	CyB206			
ECTS Credits	7			
SWL (hr/sem)	175			
Module Level	2	Semester of Delivery		2
Administering Department	CyB	College	CSIT	
Module Leader			E-mail	
Module Leader's Acad. Title	Assist Prof	Module Leader's Qualification	PhD	
Module Tutor	Name (if available)	E-mail	E-mail	
Peer Reviewer Name	Name	E-mail	E-mail	
Scientific Committee Approval Date	16/2/2025	Version Number	1.0	

Relation with other Modules				
العلاقة مع المواد الدراسية الأخرى				
Prerequisite Module	Object-Oriented Programming I		Semester	1

Co-requisites Module		Semester	
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Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. Understand advanced Object-Oriented Programming (OOP) concepts and techniques. 2. Develop efficient and modular Python programs using OOP principles. 3. Apply OOP in real-world applications, including GUI and file handling. 4. Enhance problem-solving skills using Python's OOP capabilities.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Explain the principles of Object-Oriented Programming. 2. Implement classes, objects, attributes, and methods in Python. 3. Utilize inline functions (lambda) inside classes. 4. Work with arrays of objects and pointers to objects. 5. Apply friend functions in Python. 6. Overload operators using member functions. 7. Implement various inheritance types, including multiple, multilevel, hierarchical, and hybrid inheritance. 8. Use method overriding for polymorphism. 9. Demonstrate composition and aggregation in class relationships. 10. Perform file handling operations in Python. 11. Develop GUI applications using Tkinter.
Indicative Contents المحتويات الإرشادية	1. Review of OOP concepts. 2. Creating inline functions inside a class (lambda functions). 3. Working with arrays of objects and pointers to objects. 4. Friend functions in Python. 5. Advanced operator overloading techniques. 6. Implementation of various types of inheritance. 7. Method overriding for polymorphism. 8. Composition and aggregation in OOP. 9. File handling in Python. 10. GUI programming using Tkinter.

Learning and Teaching Strategies	
استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes and the lab, interactive

	tutorials, and by considering types of simple experiments involving some sampling activities that are interesting to the students.
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Student Workload (SWL)			
الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	77	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	98	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative Assessment	Quizzes (Theoretical)	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Participation	1	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Quizzes (Lab)	2	10% (10)	Continuous	All
	Project	1	10% (10)	13	LO #5, #8 and #10
Summative Assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total Assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Review of OOP Concepts: Introduction to Class Fundamentals
Week 2	Creating Inline Functions Inside a Class (Lambda)
Week 3	Arrays of Objects (Classes)
Week 4	Pointers to Objects (Classes)
Week 5	Friend Functions
Week 6	Operator Overloading (advanced)
Week 7	Operator Overloading Using Member Functions (advanced)
Week 8	Mid-term Exam
Week 9	Inheriting Multiple Base Classes
Week 10	Method Overriding in Python Inheritance
Week 11	Multilevel Inheritance
Week 12	Hierarchal and Hybrid Inheritance
Week 13	Composition and Aggregation
Week 14	File handling
Week 15	Introduction to Tkinter
Week 16	Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Implement class (and instance) with attributes and methods.
Week 2	Exercises on creating Inline Functions Inside a Class (Lambda).
Week 3	Implementing examples by using Arrays of Objects (Classes)
Week 4	Implementing examples on Pointers to Objects (Classes)
Week 5	Exercises on Friend Functions
Week 6	Implementing examples Operator Overloading (advanced)
Week 7	Exercises on Operator Overloading Using Member Functions (advanced)
Week 8	1st Quiz
Week 9	Implementing examples of Inheriting Multiple Base Classes
Week 10	Implementing examples of method Overriding in Python Inheritance
Week 11	Implementing exercises on Multilevel Inheritance
Week 12	Implementing hierarchal and Hybrid Inheritance
Week 13	Exercises in Composition and Aggregation
Week 14	2st Quiz
Week 15	Implementing File handling
Week 16	Implementing examples on Tkinter

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Python Object-Oriented Programming - Fourth Edition, Steven F. Lott, Dusty Phillips, 2021.	No

Recommended Texts	- Fluent Python, Luciano Ramalho, 2015. - "Object-Oriented Python: Master OOP by Building Games and GUIs", Irv Kalb, 2022.	No
Websites		

Grading Scheme				
مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A – Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C – Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E – Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

Module 2

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information

معلومات المادة الدراسية				
Module Title	Algorithm design and Analysis		Module Delivery	
Module Type	Core		☒ Theory ☐ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	CyB207			
ECTS Credits	6			
SWL (hr/sem)	150			
Module Level	2	Semester of Delivery		2
Administering Department	CyS	College	CSIT	
Module Leader	Athman Dhiya Abdulsatar		e-mail	athman.dhiya@uobasrah.edu.iq
Module Leader's Acad. Title	Asst. lec.		Module Leader's Qualification	
Module Tutor	Name (if available)		e-mail	
Peer Reviewer Name			e-mail	E-mail
Scientific Committee Approval Date			Version Number	

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Programming Fundamentals		Semester
	Discrete Mathematics		
	Data Structures		
Co-requisites module			Semester

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. Understand Fundamental Concepts: To provide students with a solid understanding of the fundamental concepts of algorithm design and analysis, including time and space complexity , asymptotic notation , and algorithmic paradigms .

	2. Develop Problem-Solving Skills: To equip students with the ability to design and analyze efficient algorithms for solving real-world problems. 3. Enhance Programming Proficiency: To improve students' programming skills by implementing various algorithms and data structures. 4. Prepare for Academic and Professional Challenges: To prepare students for advanced studies in computer science and for professional roles that require strong algorithmic problem-solving skills.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Upon successful completion of this course, students will be able to: 1. formulate computational problems precisely and design appropriate algorithms. 2. 3. Apply standard algorithmic paradigms such as divide-and-conquer, greedy methods, and dynamic programming. 4. 5. Analyze time and space complexity using asymptotic notation. 6. 7. Prove algorithm correctness using rigorous mathematical reasoning. 8. 9. Design and analyze graph algorithms for real-world problem settings.
Indicative Contents المحتويات الإرشادية	The course covers the fundamental principles and methodologies of algorithm design and analysis, with emphasis on correctness, efficiency, and applicability. Indicative topics include, but are not limited to, the following: The nature and role of algorithms in computer science, including formal definitions, problem abstraction, and algorithmic modeling. Introduction to computational efficiency and the distinction between algorithm design and implementation. Asymptotic analysis of algorithms, including worst-case, average-case, and best-case performance. Use of asymptotic notations (Big-O, Big-Theta, Big-Omega) to compare algorithm growth rates and assess scalability. Divide-and-conquer techniques, including recursive problem decomposition, recurrence relations, and the Master Theorem. Applications to fundamental algorithms such as binary search, merge sort, and fast arithmetic algorithms. Greedy algorithm design, focusing on the greedy-choice property and optimal substructure. Formal proof techniques for greedy correctness. Classical applications including interval scheduling, Huffman coding, and minimum spanning tree algorithms.

	Dynamic programming methodology, including problem decomposition, state definition, and transition formulation. Bottom-up and top-down approaches. Classical problems such as the knapsack problem, longest common subsequence, and sequence alignment. Graph algorithms, including graph representations, traversal techniques (breadth-first search and depth-first search), and analysis of correctness and complexity. Advanced graph problems, including shortest path algorithms, network flow, and bipartite matching. Introduction to maximum flow algorithms and their applications. Computational complexity theory fundamentals, including polynomial-time computation, reductions, and the classification of problems into complexity classes. Introduction to NP-completeness and its implications for algorithm design.
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Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	To achieve the module objectives and learning outcomes, a variety of teaching and learning strategies will be employed. These strategies are designed to cater to different learning styles, promote active engagement, and ensure a deep understanding of the material.
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Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل		Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل		Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	175		

Module Evaluation

تقييم المادة الدراسية

	Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
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Formative assessment	Quizzes	1	10% (10)	5	
	Assignments	1	10% (10)	3	
	In class Assignments	1	10% (10)	9	
	Report	1	10% (10)	13	All
Summative assessment	Midterm Exam	1hr	10% (10)	7 or 8	
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Algorithms
Week 2	Mathematical Analysis of Algorithms
Week 3	Divide-and-Conquer
Week 4	Advanced Divide and Conquer
Week 5	Greedy Algorithms – Theory
Week 6	Review
Week 7	Mid Exam
Week 8	Greedy Algorithms – Applications
Week 9	Dynamic Programming – Foundations & Classical
Week 10	Advanced Dynamic Programming
Week 11	Graph Algorithms
Week 12	Graph Algorithms
Week 13	Seminar
Week 14	Report discussion
Week 15	Report discussion
Week 16	Exam

Delivery Plan (Weekly Lab. Syllabus)	
المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	
Week 8	
Week 9	
Week 10	
Week 11	
Week 12	
Week 13	
Week 14	
Week 15	

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Algorithm design / Jon Kleinberg, ´Eva Tardos.—1st ed.	No
Recommended Texts	Cormen, T. H., Leiserson, C. E., Rivest, R. L., & Stein, C. <i>Introduction to Algorithms</i>, 4th ed., MIT Press, 2022. Skiena, S. S. <i>The Algorithm Design Manual</i>, 3rd ed., Springer, 2020	No
Websites	https://www.geeksforgeeks.org/dsa/dsa-tutorial-learn-data-structures-and-algorithms/	

Grading Scheme مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A – Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C – Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E – Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

Module 3

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

معلومات المادة الدراسية					
عنوان الوحدة		Dynamic Websites Programming		طرق إيصال المادة العلمية	
نوع الوحدة		Basic		• نظري • محاضرات مفتوحة للطالب • مختبرات • أفلام علمية • سمنيارات • سفرات علمية	
نموذجCode		CyB208			
الساعات المعتمدة ضمن النظام الأوروبي		3			
SWL (hr/sem)		100			
المرحلة الدراسية		الثانية	فصل الدراسي		2
القسم الإداري		الامن السيبراني	الكلية	كلية علوم الحاسوب وتكنولوجيا المعلومات	
مدرس المادة		رعد عبدالحسن مهجر		e-mail	raad.muhajjar@uobasrah.edu.iq
اللقب العلمي		استاذ		المؤهلات	دكتوراة علوم حاسوب

مدرس مادة	لا يوجد	e-mail	E-mail
المصادر	لا يوجد	e-mail	E-mail
تاريخ موافقة اللجنة العلمية		رقم الاصدار	

العلاقة مع المواد الدراسية الأخرى			
متطلبات الأساسية للوحدة	تصميم المواقع الثابتة	الفصل الدراسي	الاول
متطلبات الوحدة الأخرى	لا يوجد	الفصل الدراسي	لا يوجد

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
أهداف المادة الدراسية	1. فهم الفرق بين المواقع الثابتة والمواقع الديناميكية 2. تنفيذ السلوك الديناميكي باستخدام JavaScript 3. التعامل مع نموذج كائن المستند (DOM) ومعالجة الأحداث 4. تطوير تطبيقات جهة الخادم باستخدام Node.js 5. الاتصال بقواعد بيانات MySQL وإدارتها 6. بناء تطبيقات ديناميكية من خلال دمج الواجهة الأمامية مع الواجهة الخلفية
مخرجات التعلم للمادة الدراسية	1. تصميم صفحات ويب ديناميكية باستخدام JavaScript 2. تطبيق مفاهيم البرمجة باستخدام JavaScript 3. التحكم في عناصر صفحات الويب باستخدام DOM 4. تطوير تطبيقات جهة الخادم باستخدام Node.js 5. تنفيذ عمليات قواعد البيانات باستخدام MySQL 6. دمج مكونات الواجهة الأمامية مع الواجهة الخلفية

استراتيجيات التعلم والتعليم

•المحاضرات والعروض التوضيحية

تقديم المفاهيم النظرية الأساسية مدعومة بالبرمجة المباشرة وأمثلة من تطبيقات الويب الواقعية.

•المختبرات العملية التطبيقية

توفير تدريب عملي مستمر على البرمجة لتطوير مهارات الطلبة في بناء تطبيقات ويب ديناميكية وتفاعلية.

•التعلم القائم على المشاريع والتعلم التعاوني

إشراك الطلبة في مشاريع فردية وجماعية لمحاكاة بيئات التطوير الحقيقية في سوق العمل.

•التقييم المستمر والتغذية الراجعة

استخدام الواجبات والاختبارات وتقييم المشاريع مع تقديم تغذية راجعة منتظمة لتحسين مخرجات التعلم.

الاستراتيجيات

الحمل الدراسي للطلاب محسوب لـ ١٥ أسبوعا

الحمل الدراسي المنتظم للطلاب خلال الفصل	64	الحمل الدراسي المنتظم للطلاب أسبوعيا	4
الحمل الدراسي غير المنتظم للطلاب خلال الفصل	36	الحمل الدراسي غير المنتظم للطلاب أسبوعيا	2
الحمل الدراسي الكلي للطلاب خلال الفصل	100		

تقييم المادة الدراسية					
		الوقت/العدد	(الوزن)/ الدرجات	الأسابيع	نتائج التعلم ذات الصلة
التقييم التكويني	اختبارات يومية	1	%10	5 من 10	LO #1, #2 and #10, #11
	واجبات	1	%10	2 من 12	LO #3, #4 and #6, #7
	المشروع	1	%10	مستمر	All
	تقرير	1	%10	13	LO #5, #8 and #10
التقييم النهائي	امتحان النصف	2 ساعة	%10	7	LO #1 - #7
	امتحان النهائي	3 ساعات	%50	16	All
المجموع الكلي للتقديرات			%100 درجات		

المنهاج الأسبوعي النظري	
	المواد التي يغطيها
الأسبوع 1	مقدمة في تصميم الويب الديناميكي
الأسبوع 2	(JavaScript و CSS و HTML أساسيات) مراجعة تصميم الويب الثابت
الأسبوع 3	JavaScript أساسيات
الأسبوع 4	هياكل التحكم (الشروط والحلقات)
الأسبوع 5	(Scope) الدوال ونطاق المتغيرات
الأسبوع 6	المصفوفات والكائنات
الأسبوع 7	والأحداث DOM التعامل مع
الأسبوع 8	(Client-Server) مفاهيم العميل – الخادم

الاسبوع 9	Node.js مقدمة في
الاسبوع 10	(أساسيات قواعد البيانات) MySQL مع Node.js
الاسبوع 11	(أساسيات قواعد البيانات) MySQL مع Node.js
الاسبوع 12	(CRUD عمليات) Node.js باستخدام MySQL عمليات قواعد بيانات
الاسبوع 13	(CRUD عمليات) Node.js باستخدام MySQL عمليات قواعد بيانات
الاسبوع 14	تنفيذ المشروع النهائي
الاسبوع 15	الامتحان النهائي

المنهاج الاسبوعي للمختبر	
	المواد التي سيتم تغطيتها بالمنهج
الاسبوع 1	CSS و HTML مشروع مراجعة
الاسبوع 2	JavaScript تمارين
الاسبوع 3	DOM مهام التعامل مع
الاسبوع 4	Node.js برمجة
الاسبوع 5	MySQL عمليات قواعد بيانات
الاسبوع 6	تنفيذ تطبيق ديناميكي كامل
الاسبوع 7	JavaScript تمارين

مصادر التعلم والتدريس

متوفر في المكتبة؟	المصدر	
Available in the electronic library	1. Duckett, J. JavaScript and JQuery: Interactive Front-End Web Development 2. Flanagan, D. JavaScript: The Definitive Guide 3. Node.js Official Documentation MySQL Official Documentation	المصدر المطلوب
Available in the electronic library	Web Development with Node & Express — Ethan Brown Node.js Web Development — David Herron Node Cookbook — Bethany Griggs	المصدر الموصى بها
	MDN – Express / Node.js Learning Path Official Node.js Documentation (General Reference) Community / Learning Lists (GitHub Node Books Collection)	موقع الكتروني

مخطط الدرجات				
المجموعة	Grade	التقدير	الدرجات %	التعريف
مجموعة النجاح 100(-50)	أ (الامتياز)	امتياز	90 - 100	الأداء متميز
	ب- جيد جدا	جيد جدا	80 - 89	أعلى من المتوسط مع بعض الأخطاء
	ج (جيد)	جيد	70 - 79	عمل سليم مع أخطاء ملحوظة
	د(مرضي)	متوسط	60 - 69	متوسطة ولكن مع عيوب كبيرة
	هـ- مقبول	مقبول	50 - 59	الاداء يلبي الحد الأدنى من المعايير
مجموعة الفشل 49(-0)	الفشل (رسوب)	راسب (قيد المعالجة)	(45-49)	مطلوب المزيد من العمل ولكن تم منح الائتمان
	الرسوب	راسب	(0-44)	يحتاج للمزيد من العمل والجهد لنيل متطلبات النجاح

ملاحظة: العلامات سيتم تقريب الأماكن العشرية أعلى أو أقل من 0.5 إلى العلامة الكاملة الأعلى أو الأدنى (على سبيل المثال، سيتم تقريب العلامة 54.5 إلى 55، بينما سيتم تقريب العلامة 54.4 إلى 54. لدى الجامعة سياسة عدم التغاضي عن "فشل النجاح القريب" لذا فإن التعديل الوحيد على العلامات التي تمنحها العلامة (العلامات) الأصلية سيكون التقريب التلقائي الموضح أعلاه.

Module 4

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Cyber Security Principles		Module Delivery
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	CyS109		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	1	Semester of Delivery	
Administering Department	CyS	College	College of Computer Science and Information Technology
Module Leader	Name	e-mail	E-mail
Module Leader's Acad. Title	Professor	Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	01/10/2023	Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	The aim of this course is to equip students with a strong foundation in cybersecurity principles and practices. By the end of the course, students will have a deep understanding of cybersecurity concepts, be able to recognize and mitigate common security threats, and appreciate the ethical and legal aspects of cybersecurity.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of this course, students will: 8. Understand Cybersecurity Fundamentals: Gain a strong foundation in cybersecurity principles, terminologies, and concepts. 9. Identify Security Threats: Recognize common cybersecurity threats and vulnerabilities. 10. Implement Security Measures: Learn practical strategies and tools to secure digital systems and networks. 11. Analyze Security Incidents: Develop skills to investigate and respond to security incidents. 12. Promote Cybersecurity Awareness: Understand the importance of cybersecurity in today's digital world and promote best practices. 13. Incident Response and Recovery: Students should be capable of developing and implementing an incident response plan, as well as understanding the steps involved in responding to and recovering from cybersecurity incidents. 14. Legal and Ethical Considerations: Students should have an awareness of the legal and ethical aspects of cybersecurity, including compliance with relevant laws and regulations, ethical hacking, and the consequences of cybercrimes.
Indicative Contents المحتويات الإرشادية	The indicative contents of the "Cyber Security Principles" course include an introduction to cybersecurity fundamentals, exploration of the cyber threat landscape, information security principles, network security, cryptography, access control and authentication, incident response, and legal and ethical considerations. These topics collectively provide students with a holistic understanding of cybersecurity concepts and practices.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The course employs a combination of teaching strategies, including lectures, interactive discussions, hands-on labs, and group projects. These strategies foster active engagement and practical application of cybersecurity principles, ensuring students grasp theoretical concepts while gaining valuable real-world experience. Additionally,
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	guest lectures by industry experts and participation in cybersecurity-related events enhance students' exposure to current industry practices and challenges.
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Student Workload (SWL)			
الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	49	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	3.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	76	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 2, 3
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 5, 7
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الأسبوعي النظري	
	Material Covered
Week 1	Introduction to Cyber Security Definition and importance of cybersecurity.
Week 2	Historical development and evolution of cyber threats. Ethical and legal considerations in cybersecurity.

Week 3	Cyber Threat Landscape Types of cyber threats (e.g., malware, phishing, DDoS attacks).
Week 4	Understanding threat actors and motivations.
Week 5	Information Security Principles Confidentiality, integrity, and availability (CIA triad).
Week 6	Security policies, standards, and guidelines.
Week 7	Network Security Network security basics.
Week 8	Firewalls, intrusion detection systems (IDS), and intrusion prevention systems (IPS).
Week 9	Cryptography Principles of encryption and decryption.
Week 10	Cryptographic algorithms and protocols.
Week 11	Access Control and Authentication User authentication methods (e.g., passwords, multi-factor authentication).
Week 12	Role-based access control (RBAC) and permissions.
Week 13	Security Incidents and Response Identifying and responding to security incidents.
Week 14	Developing an incident response plan.
Week 15	Final Review and Examination

Delivery Plan (Weekly Lab. Syllabus)	
المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab1: Introduction to Lab Environment Setting up the lab environment
Week 2	Lab 2: introduction to lab tools and resources.
Week 3	Lab 3: Vulnerability Assessment (Aligned with Cyber Threat Landscape) Conducting vulnerability scans.
Week 4	Lab 4: Identifying and prioritizing vulnerabilities.
Week 5	Lab 5: Network Monitoring (Aligned with Network Security) Monitoring network traffic and anomalies.
Week 6	Lab 6: Analyzing network logs and events.
Week 7	Lab 7: Ethical Hacking (Aligned with Ethical Hacking)

	Introduction to ethical hacking.
Week 8	Lab8: Performing ethical hacking exercises.
Week 9	Lab9: Incident Response (Aligned with Security Incidents and Response) Developing an incident response plan.
Week 10	Lab10: Identifying, analyzing, and mitigating security incidents.
Week 11	Lab11: Security Solutions (Aligned with Security Solutions) Configuring and deploying security solutions (e.g., firewalls, intrusion detection systems).
Week 12	Lab12: Conducting security assessments.
Week 13	Lab13: Group Projects (Aligned with Various Topics)
Week 14	Lab14: Collaborative group projects on cybersecurity scenarios.
Week 15	Lab15: Final Lab Review and Assessment (Aligned with Final Review and Examination)

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	"Cybersecurity: Principles and Practice" by William Stallings and Lawrie Brown	No
Recommended Texts	"Introduction to Computer and Network Security: Navigating Shades of Gray" by Timothy Shimeall and Jonathan Spring:	No
Websites		

Grading Scheme مخطط الدرجات				
Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Module 5

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Crimes of the Former Ba'ath Party		Module Delivery
Module Type	Support		☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	UOB 202		
ECTS Credits	2		
SWL (hr/sem)	50		
Module Level		Semester of Delivery	
Administering Department		College	
Module Leader	م.م. زينب علي حسين	e-mail	zainab.ali@uobasrah.edu.iq
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	This course emphasizes to students the necessity of adhering to ethical principles in teaching this knowledge-based subject, which must be passed on to current and future generations. It focuses on studying and teaching a period in Iraqi history known for violations of human rights, committing crimes against humanity, and being notorious for mass graves and genocides.	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	The importance of the curriculum lies in exposing students to the crimes committed against Iraqi scholars, including religious figures who opposed the Ba'ath Party, the suppression of the Shiite uprising, and the crimes against the Turkmen, particularly in the 199th District of Kirkuk Governorate, which included forced displacement, land confiscation, and annexation to other governorates. It also covers cross-border crimes that led to external wars against neighboring countries such as Iran and Kuwait.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	
Indicative Contents المحتويات الإرشادية	This represents a missing research-based knowledge gap in Iraqi studies, concerning more than three decades during which the Ba'ath Party ruled Iraq and committed significant human and political crimes. The material is presented to students for direct discussion through question-and-answer methods.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	1. Lectures on the subject delivered in paper format. 2. Delivering lectures in a detailed and comprehensive manner. 3. Assigning periodic reports and homework on the main topics of the course. 4. Daily discussions to assess students' understanding of the material and to evaluate daily participation. 5. Daily quizzes, monthly exams covering the curriculum, and a final exam.
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Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل		Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل		Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل			

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #10
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Report	1	20% (20)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
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المناهج الاسبوعي النظري

	Material Covered
Week 1	Section One: Descriptive Overview of Political Systems in Iraq (1921–2003)
Week 2	Section Two: Violations of Rights and Public Freedoms by the Ba'athist Regime
Week 3	Section Three: Impact of the Ba'athist Regime's Behavior on Society
Week 4	Section Four: Effects of the Transitional Period in Combating Authoritarian Policies
Week 5	Psychological and Social Aspects
Week 6	Religion and State
Week 7	Culture, Media, and the Militarization of Society
Week 8	First Exam:
Week 9	Impact of Wars on the Environment and Population
Week 10	Use of Internationally Prohibited Weapons and Environmental Pollution
Week 11	Scorched Earth Policy
Week 12	Draining of Marshes and Forced Migration
Week 13	Destruction of Agricultural Environment
Week 14	Mass Graves and Bombing of Places of Worship
Week 15	Final Exam
Week 16	Section One: Descriptive Overview of Political Systems in Iraq (1921–2003)

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts		Yes
Recommended Texts		
Websites		

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Module 6

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	English II		Module Delivery
Module Type	Basic		☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	CyB 111		
ECTS Credits	3		
SWL (hr/sem)	75		
Module Level	1	Semester of Delivery	2
Administering Department	CyB	College	CSIT
Module Leader		e-mail	

Module Leader's Acad. Title	Professor	Module Leader's Qualification	Ph.D.
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	/ /2023	Version Number	1.0

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	CyB105	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	7. Developing communication approaches. 8. Enhancing total physical response (TPR). 9. Establishing multi-outcome learning (English and science knowledge for instance).
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	19. Improved Communication Skills: Students should be able to communicate more effectively in English, expressing themselves with greater fluency and accuracy. They can participate in everyday conversations, express opinions, and discuss various topics. 20. Expanded Vocabulary: Learners should have developed a broader range of vocabulary, allowing them to understand and use a wider variety of words

	and expressions. 21. Grammar Proficiency: Students are expected to have a better grasp of English grammar, allowing them to construct more complex sentences and convey different tenses and aspects more accurately. 22. Reading Comprehension: Learners should be able to read and comprehend a variety of texts, such as articles, short stories, and excerpts from novels, with a reasonable level of understanding. 23. Writing Skills: Students should be able to write coherent paragraphs and short texts, such as emails, letters, and simple essays, demonstrating improved sentence structure and organization. 24. Listening Skills: Learners should have developed better listening skills, allowing them to understand and follow conversations, interviews, and media in English with less difficulty. 25. Cultural Awareness: At this level, students may have been exposed to various cultural aspects of English-speaking countries, leading to a better understanding of cultural norms and customs. 26. Independent Learning: Students should be more confident and independent in their language learning journey, taking initiatives to practice and learn outside of the classroom. 27. Preparation for Advanced Levels: English Level II usually serves as a foundation for more advanced language courses. After completing this level, students should be ready to progress to higher-level language studies.
Indicative Contents المحتويات الإرشادية	International student: READING: Going abroad to study. • Following instructions: filling in forms • Reading methods: skim; scan; intensive reading; extensive reading WRITING: A host family • Checking your writing: error correction - punctuation and spelling • Writing an informal email Where in the world: READING: Three countries

	• Skimming and scanning: reading for the general idea, and for particular information WRITING: My country • Brain storming ideas: topic areas and examples; • completing a paragraph • Linking ideas (1): but, however, although • Writing a description of my country Newspaper articles: READING: An unexpected journey • Predicting content: using the title and the pictures • Meaning from context: guessing the meaning of new words WRITING My country • Brainstorming ideas: topic areas and examples; completing a paragraph • Linking ideas (1): but, however, although Writing a description of my country Modern technology: READING Innovation • Purpose and audience (1 and 2): using visual and written clues WRITING Mistaken identity • Sentences/Paragraphs; helping your writing flow • Varying the structure: making writing interesting Writing an article Conferences and visits READING: A conference in Istanbul • Purpose and audience (1 and 2): using visual and written clues WRITING Invitations • Using formal expressions: writing academic emails and letters • Writing a formal email Science and our world: READING: Air pollution
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- Making notes: organizing recording, and remembering important information
- Interpreting meaning; recognizing fact and speculation

WRITING Technology - good or bad?

- Organizing ideas (1): planning the arguments for and against
- Linking ideas (2): first, for instance, in conclusion ... Writing a discursive essay

People: past and present

READING: Three famous writers

- Using original sources: dealing with difficult language and unknown vocabulary

WRITING: Trends

- Paraphrasing and summarizing: using other sources
- Writing a summary

The world of IT:

READING: Computers

- Rephrasing and explaining; dealing with difficult scientific and technological words
- Avoiding repetition (2): pronouns and what they refer to

WRITING: IT - benefits and drawbacks

- Linking ideas (3): cause and result Coherent writing; writing up notes
- Writing from notes

Inventions, discoveries, and processes:

READING: How things work

- Intensive reading: strategies for focusing your reading
- Linking ideas (4); sequencing words to describe a process

WRITING How things are made

- The passive voice; writing in neutral style
- Clarifying a sequence: describing a process

	• Writing a description of a process Travel and tourism: READING: International tourism • Interpreting data: statistical information in graphs, charts, and texts VOCABULARY DEVELOPMENT Varying vocabulary (2) • A voiding repetition (3): describing graphs using synonyms, adjectives + nouns, verbs + adverbs
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	For Teachers: 17. Interactive and Communicative Approach: Encourage students to engage in meaningful conversations, discussions, and role-plays. This approach emphasizes real-life communication and helps students practice using English in different contexts. 18. Error Correction: Provide constructive feedback on students' errors without discouraging them. Focus on correcting essential mistakes that hinder communication while praising their efforts to build confidence. 19. Contextual Learning: Use authentic materials like articles, videos, and short stories to introduce new vocabulary and grammar in relevant contexts. This helps students understand language usage in real-life situations. 20. Task-Based Learning: Design activities and tasks that require students to use English to complete meaningful projects or solve problems. This approach fosters critical thinking and language application skills. 21. Grammar in Context: Teach grammar points within the context of authentic texts or dialogues. This helps students see how grammar functions in real communication rather than just learning rules in isolation.

22. **Encourage Reading:** Assign reading materials suited to the students' proficiency level. Reading improves vocabulary, comprehension, and exposes students to different writing styles.
23. **Listening Practice:** Provide opportunities for listening exercises, such as watching English-language videos, movies, or podcasts. This enhances listening skills and exposes students to different accents and speech patterns.
24. **Writing Practice:** Assign writing tasks like essays, emails, or short stories. Provide feedback on their writing to improve their skills gradually.

For Students:

17. **Consistent Practice:** Regularly practice reading, writing, listening, and speaking in English. Consistency is crucial for improvement.
18. **Use Language Apps and Online Resources:** Utilize language learning apps and online resources to reinforce learning, expand vocabulary, and improve grammar.
19. **Join Language Exchange Groups:** Engage in language exchange programs or groups where you can practice speaking English with native speakers or other learners.
20. **Set Goals:** Establish clear language learning goals and track your progress. Celebrate achievements and milestones.
21. **Immerse Yourself:** Surround yourself with English as much as possible. Watch English movies, TV shows, and listen to English music or podcasts.
22. **Keep a Language Journal:** Write down new words, expressions, and grammar rules you learn. Review and practice them regularly.
23. **Practice with Different Media:** Practice English through various mediums like reading books, watching documentaries, listening to news, or participating in online forums.
24. **Be Patient and Persistent:** Language learning takes time and effort. Stay motivated and persistent even if you encounter challenges

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعاً

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	33	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	42	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #10,
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Report	1	20% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الأسبوعي النظري	
	Material Covered

Week 1	International student
Week 2	Where in the world
Week 3	Newspaper articles
Week 4	Conferences and visits
Week 5	Science and our world
Week 6	Midterm exam
Week 7	People: past and present
Week 8	The world of IT
Week 9	Inventions, discoveries, and processes
Week 10	Travel and tourism
Week 11	Final exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Sarah Philpot. Headway: Academic skills- reading, writing, and study skills. LEVEL 2 Student's Book. Oxford.	Yes
Recommended Texts		
Websites		

Grading Scheme مخطط الدرجات
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Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C – Good	جيد	70 - 79	Sound work with notable errors
	D – Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Curriculum for the third Year, First Semester.

Module 1

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information		
معلومات المادة الدراسية		
Module Title	Advanced Cryptography	Module Delivery
Module Type	Core	☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	CyB304	
ECTS Credits	4	
SWL (hr/sem)	100	

Module Level	4	Semester of Delivery	1
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	Name	e-mail	E-mail
Module Leader's Acad. Title	Professor	Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	15/09/2025	Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	This course provides students with the most common cryptographic algorithms and protocols and how to use cryptographic algorithms and protocols to secure distributed applications and computer networks: • Explain the objectives of information security. • Explain the importance and application of each of confidentiality, integrity, authentication and availability. • Understand various cryptographic algorithms. • Understand the basic categories of threats to computers and networks.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of the course, students will be able to: • Understand the Cryptography principles and types. • Describe the computer systems security issues. • Student will be able to understand basic cryptographic algorithms, message and security issues. • Ability to identify information system requirements for both of them, such as, client and server. • Ability to understand the current issues towards information security. • Apply security principles to system design.
Indicative Contents	• Block Ciphers and the Data Encryption Standard. - Block Cipher Principles.

المحتويات الإرشادية	- Differential and Linear Cryptanalysis. - Block Cipher Modes of Operation. • Advanced Encryption Standard. • Stream Cipher. • Asymmetric Ciphering: Public Key Cryptography, RSA. • Asymmetric Ciphering: Public Key Cryptography, Diffie-Hellman Key Exchange. • Asymmetric Ciphering: Public Key Cryptography, Elgamal Cryptographic system. • Asymmetric Ciphering: Public Key Cryptography, Elliptic Curve Cryptography. • Asymmetric Ciphering: Public Key Cryptography, Diffie-Hellman Key Exchange. • Cryptography Data Integrity: Hash Function. • Cryptography Data Integrity: Two Simple Hash Function. • Cryptography Data Integrity: Secure Hash Algorithm (SHA-3). • Cryptography Data Integrity: Message Authentication Codes. • Digital Signature: Elgamal Digital Signature Scheme. • Digital Signature: Schnorr Digital Signature Scheme + NIST DSS. • Digital Signature: Elliptic Curve Digital Signature Scheme. • Digital Signature: RSA-PSS Digital Signature Scheme.
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Learning and Teaching Strategies			
استراتيجيات التعلم والتعليم			
Strategies	Type something like: The main strategy that will be adopted in delivering this module is to encourage students’ participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.		
Student Workload (SWL)			
الحمل الدراسي للطالب			
Structured SWL (h/sem)	45	Structured SWL (h/w)	
الحمل الدراسي المنتظم للطالب خلال الفصل		الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem)	55	Unstructured SWL (h/w)	
الحمل الدراسي غير المنتظم للطالب خلال الفصل		الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem)	100		
الحمل الدراسي الكلي للطالب خلال الفصل			

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	3	24% (24)	3,6,9	LO #1, 2, 10 and 11
	Assignments	2	6% (6)	2, 12	LO # 3, 4, 6 and 7
	Projects	5	5%(5)	4	Continuous
	Report	1	5% (5)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	1 hr	10% (10)	7	LO # 1-7
	Final Exam	2 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الأسبوعي النظري	
	Material Covered
Week 1	Block Ciphers and the Data Encryption Standard.
Week 2	Data Encryption Standard.
Week 3	Avalanche Effect.
Week 4	Modes of Operation: CTR.
Week 5	Rijndael Cipher.
Week 6	AES Key Expansion.
Week 7	Stream Cipher.
Week 8	Asymmetric Cipherng: Public Key Cryptography, RSA.
Week 9	Asymmetric Cipherng: Public Key Cryptography, Diffie-Hellman Key Exchange.
Week 10	Asymmetric Cipherng: Public Key Cryptography, Elgamal Cryptographic system.
Week 11	Asymmetric Cipherng: Public Key Cryptography, Elliptic Curve Cryptography.
Week 12	Asymmetric Cipherng: Public Key Cryptography, Diffie-Hellman Key Exchange.
Week 13	Cryptography Data Integrity: Hash Function.
Week 14	Cryptography Data Integrity: Two Simple Hash Function.
Week 15	Cryptography Data Integrity: Message Authentication Codes.
Week 16	Preparatory week before the final Exam.

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	لا يوجد مختبر
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	William Stallings, "Cryptography and Network Security. Principle and Practice", Fourth Edition, Principle Hall, USA, 2006.	No
Recommended Texts	Alfred J. Menezes , Paul C. van Oorschot and Scott A. Vanstone , "Handbook of Applied Cryptography", Fifth Edition , CRC Press, 2001.	No
Websites		

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C – Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Module 2

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Website security		Module Delivery
Module Type	Core		☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	CyB		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	2	Semester of Delivery	1
Administering Department	CyB	College	CSIS
Module Leader		e-mail	
Module Leader's Acad. Title	Assist lect	Module Leader's Qualification	PHD
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	Semester	
Co-requisites module		Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	36. Understand the fundamental concepts and importance of web security. 37. Identify common web application threats and vulnerabilities (such as XSS, SQL Injection, CSRF). 38. Explain how attackers exploit weaknesses in web applications. 39. Understand the role of authentication, authorization, and session management in securing web systems. 40. Apply secure coding practices to reduce security risks in web applications. 41. Recognize the importance of input validation and output encoding. 42. Understand security mechanisms such as HTTPS, SSL/TLS, and secure cookies. 43. Use basic security tools and techniques to identify and mitigate web security issues.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	19. Describe the core principles and concepts of web security. 20. Identify and classify common web application vulnerabilities and attacks. 21. Analyze how security flaws arise in web applications and how they can be exploited. 22. Implement basic security controls for authentication, authorization, and session management. 23. Apply secure coding practices to prevent common web-based attacks. 24. Evaluate the effectiveness of web security mechanisms such as HTTPS,

	SSL/TLS, and cookies. 25. Use security tools to detect, analyze, and mitigate web application vulnerabilities.
Indicative Contents المحتويات الإرشادية	

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Implement secure coding standards and follow best practices during web application development. Apply input validation and output encoding to prevent injection attacks. Use strong authentication and authorization mechanisms to control user access. Enforce HTTPS and proper SSL/TLS configuration to protect data in transit. Regularly update and patch web servers, frameworks, and libraries. Conduct vulnerability assessments and penetration testing on web applications. Deploy security tools such as Web Application Firewalls (WAF) to monitor and block attacks. Apply the principle of least privilege to users and system components. Perform regular security audits and continuous monitoring of web systems. Educate developers and users about web security threats and safe practice

Student Workload (SWL) الحمل الدراسي للطلاب محسوب لـ ١٥ أسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	62	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	4.1

Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	63	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	4.2
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	125		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	All
	Assignments	2	20% (20)	2 and 12	LO #2, #4 and #5, #8
	Projects / Lab.	-	-	-	-
	Report	1	10% (10)	13	LO #1, #3, #6 and #7
Summative assessment	Midterm Exam	2hr	10% (10)	7	All
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Web Security
Week 2	Architecture of Modern Web Applications

Week 3	Web Attacks
Week 4	Injection Attacks.
Week 5	Cross-Site Scripting (XSS)
Week 6	CSRF and Session Hijacking
Week 7	Authentication and Identity Attacks
Week 8	API Security
Week 9	Access Control and Authorization
Week 10	Database and Data Storage Security
Week 11	Web Application Firewalls (WAF) & Content Security Policy (CSP)
Week 12	Server and Infrastructure Security
Week 13	Governance, Risk, and Compliance (GRC)
Week 14	Final Projects and Presentations
Week 15	Final Projects and Presentations
Week 16	Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Cyber Risk Resources for Practitioners	
Recommended Texts		
Websites		

Grading Scheme				
مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A – Excellent	امتياز	90 – 100	Outstanding Performance
	B - Very Good	جيد جدا	80 – 89	Above average with some errors
	C – Good	جيد	70 – 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 – 69	Fair but with major shortcomings
	E – Sufficient	مقبول	50 – 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

Module 3

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information		
معلومات المادة الدراسية		
Module Title	Artificial Intelligence	Module Delivery
Module Type	Basic	☐ Theory ☐ Lecture ☐ Lab ☐ Tutorial
Module Code	CyB305	
ECTS Credits	125	

SWL (hr/sem)	3	☐ Practical ☐ Seminar	
Module Level		Semester of Delivery	
Administering Department	Cyber security department	College	Collage of computer science and information technology
Module Leader	Athman Dhiya Abdulsatar	e-mail	
Module Leader's Acad. Title	Assistant lecturer	Module Leader's Qualification	Master degree
Module Tutor	Athman Dhiya Abdulsatar	e-mail	Athman.dhiya@uobasrah.edu.iq
Peer Reviewer Name	Athman Dhiya Abdulsatar	e-mail	Athmanabdulsatar@gmail.com
Scientific Committee Approval Date		Version Number	07726259220

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module		Semester	
Co-requisites module		Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	- Explain the foundations, history, and applications of AI. - Model intelligent agents and apply problem-solving and search strategies. - Implement adversarial search and logical reasoning methods. - Apply probabilistic reasoning, planning, and decision-making under uncertainty. - Understand key machine learning techniques and neural networks. - Explore applications in NLP, computer vision, and robotics. - Evaluate the ethical and societal impacts of AI.
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Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Explain the foundations, history, evolution, and real-world applications of artificial intelligence. 2. Describe intelligent agents, their architectures, environments, and performance evaluation. 3. Apply search and problem-solving techniques, including uninformed, informed, and adversarial search. 4. Represent knowledge and perform logical and probabilistic reasoning under uncertainty. 5. Implement machine learning models, including supervised, unsupervised, and neural networks. 6. Demonstrate understanding of AI applications in NLP, computer vision, and robotics. 7. Analyze ethical, safety, fairness, privacy, and societal impacts of AI technologies.
Indicative Contents المحتويات الإرشادية	• Foundations of AI – Definition, history, evolution, and applications. • Intelligent Agents – Architectures, environments, rationality, and performance measures. • Problem-Solving & Search – Uninformed search (BFS, DFS, UCS) and informed search (Greedy, A*). • Adversarial Search – Game playing, Minimax, and Alpha-Beta pruning. • Knowledge Representation & Reasoning – Propositional logic, first-order logic, inference methods. • Reasoning under Uncertainty – Probability, Bayesian networks, Hidden Markov models. • Planning – Classical planning (STRIPS, forward/backward search, partial-order planning). • Machine Learning – Supervised vs. unsupervised learning, decision trees, clustering, dimensionality reduction. • Artificial Neural Networks – Perceptrons, multilayer networks, backpropagation. • Advanced Applications – Basics of NLP, computer vision, and robotics. • Ethics & Societal Impact – Fairness, safety, transparency, privacy, and global implications of AI.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	• Lectures & Interactive Discussions – Introduce AI foundations, algorithms, and applications with real-world examples and class debates. • Problem-Solving Sessions – In-class exercises on search, logic, probability, and planning to strengthen analytical skills.

	• Hands-on Labs & Tutorials – Implement AI algorithms (e.g., BFS, A*, decision trees, neural networks) using Python or related tools. • Quizzes & Assignments – Short assessments to reinforce key ideas and encourage continuous learning. • Case Studies & Applications – Analyze real-world AI systems in healthcare, NLP, robotics, and computer vision. • Group Projects / Mini-Projects – Collaborative work on designing and presenting a small AI application. • Seminars & Reflection – Discussions on ethical, social, and global impacts of AI.
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Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل		Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل		Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل			

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	1	10	Week 5	
	Assignments	2	10	Week 2 & 7	
	Seminar	1	10	Week 12	
	Report	1	10	Week 13	
Summative assessment	Midterm Exam	1	10	Week 8	
	Final Exam	1	50		
Total assessment			100		

Delivery Plan (Weekly Syllabus) المنهاج الأسبوعي النظري	
	Material Covered

Week 1	• Introduction to Artificial Intelligence • Definition, history, and evolution of AI • Real-world applications of AI
Week 2	• Intelligent Agents • Agent architectures and environments • Performance measures and rationality
Week 3	• Problem Solving with Search • Uninformed search strategies: BFS, DFS, Uniform-Cost Search
Week 4	• Informed Search Strategies • Greedy Search, A* Algorithm • Heuristics and optimization in search
Week 5	• Adversarial Search • Game playing, Minimax algorithm • □ Alpha-Beta pruning for efficiency
Week 6	• Knowledge Representation I • Propositional logic • □ First-order logic: syntax and semantics
Week 7	• Knowledge Representation II • Inference in first-order logic • Resolution and Unification
Week 8	• Review + Midterm Exam
Week 9	• Reasoning under Uncertainty • Probability basics • Bayesian Networks • Hidden Markov Models
Week 10	• Planning • STRIPS • Forward and backward state-space planning • Partial-order planning
Week 11	• Machine Learning I • Introduction to learning • Supervised learning • Decision trees
Week 12	• Machine Learning II • Unsupervised learning

	• Clustering (k-means) • Dimensionality reduction • Artificial Neural Networks
Week 13	• Advanced Topics & Applications • Introduction to Natural Language Processing (NLP) • Computer Vision • Overview of Robotics
Week 14	• Ethics and Future of AI • Safety, fairness, privacy, explainability, global impact
Week 15	• Review before Final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	
Week 8	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Artificial Intelligence - A Modern Approach Fourth Edition by <i>Stuart Russell & Peter Norvig</i>	
Recommended Texts		

Websites	https://www.deeplearning.ai/short-courses/ai-python-for-beginners/
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Grading Scheme مخطط الدرجات				
Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
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Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

Module 4

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information						
معلومات المادة الدراسية						
Module Title	Computer Network		Module Delivery			
Module Type	Core		☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar			
Module Code	CYS301					
ECTS Credits	6					
SWL (hr/sem)	150					
Module Level	3	Semester of Delivery	1			
Administering Department	CS	College	CSIS			

Module Leader	Dr. Khulood A. Nassar	e-mail	Khulood.nassar@uobasrah.edu.iq
Module Leader's Acad. Title	Ass. Proof.	Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	151/09/2025	Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. Introduce students to the foundational concepts, principles, and terminology of computer network. This includes understanding the importance of communication and systems, networks, and the role of modern method of sending data. 2. Familiarize students with various networks, standards, and best practices that are relevant to the field of communication devices. This includes understanding sending and receiving requirements, best protocols, and main goals of communication protocol. 3. Explore the principles and techniques of network and communication system through standard systems. 4. Provide students with knowledge of development practices and methodologies of data communication. This involves offering data transmission techniques. 5. Introduce students to the fundamentals of computer network. This includes learning how to addressing, as well as investigations of this addressing methods and preserving variable them.

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Gain a comprehensive understanding of the fundamental concepts, principles, and terminology related to computer network, including the importance of data communication and systems. 2. Demonstrate knowledge and comprehension of various addressing methods, standards, and best practices relevant to data communication, including sending and receiving requirements. 3. Apply the principles and techniques of networks types, including understanding network architecture, communication protocols. 4. Apply software development practices and methodologies, including understanding common software applications. 5. Understand and apply the fundamentals of communication, including data transmission media. 6. Apply the principles and protocols of communication, including understanding subnetting methods, management, and the role of subnet the network. 7. Apply skills in managing networks, including understanding communication. 8. Understand and apply considerations associated with data communication. 9. Demonstrate awareness and understanding of emerging technologies and trends in data communication, including devices, and Internet.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. • Module 1: Introduction to computer network. [12 hrs] • Module 2: addressing. [12 hrs] • Module 3: subnetting. [12 hrs] • Module 4: network layers system. [12 hrs] • Module 5: transmission data media. [12 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.

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Student Workload (SWL)			
الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	47	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	103	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	0	0% (0)	Continuous	All
	Report	2	20% (20)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to computer network
Week 2	Networks types
Week 3	Network devices
Week 4	Addressing
Week 5	Ip addressing
Week 6	Subnetting
Week 7	Masking and ranges
Week 8	Network layers model
Week 9	OSI model
Week 10	Mid exam
Week 11	TCP model and encapsulation operation
Week 12	Pysical media
Week 13	Wire media
Week 14	Optical fiber
Week 15	Wirless media

Delivery Plan (Weekly Lab. Syllabus)	
المنهاج الاسبوعي للمختبر	
	Material Covered

Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Fruize W. Bahroze, " Computer networki: Principles and Aritecture ", fifth Edition, Course Technology, New york, 2015.	No
Recommended Texts	Peter L. Dordol . " An Introduction to Computer Networks "F Six Edition ,Printice Hill, 2022	No
Websites		

Grading Scheme				
مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C – Good	جيد	70 - 79	Sound work with notable errors

	D – Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
(0 – 49)	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Module 5

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	E-Commerce and its security		Module Delivery	
Module Type	Core		☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	CyB306			
ECTS Credits	4			
SWL (hr/sem)	60			
Module Level	3	Semester of Delivery	1	
Administering Department	CyB	College	CSIS	
Module Leader		e-mail		
Module Leader's Acad. Title	Assist teacher	Module Leader's Qualification	PHD	

Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	CYB109	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1. To provide comprehensive understanding of e-commerce fundamentals, including concepts, evolution, and distinctions from traditional commerce. 2. To examine various e-commerce business models and their applications in the modern digital economy. 3. To analyze critical cybersecurity threats, privacy concerns, and ethical challenges in electronic transactions. 4. To explore Electronic Data Interchange (EDI) systems for business-to-business communication and their impact on organizational efficiency. 5. To investigate supply chain management principles and the integration of e-commerce technologies for operational optimization.
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Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Define e-commerce, compare it with traditional commerce, and evaluate its multi-dimensional advantages and disadvantages. 2. Classify and differentiate between major e-commerce business models (B2B, B2C, C2C, C2B, B2G, G2B, G2C) with real-world examples. 3. Identify security threats in e-commerce environments and propose appropriate cybersecurity measures and privacy protection strategies. 4. Explain the functionality, benefits, and implementation challenges of Electronic Data Interchange (EDI) systems. 5. Describe key components of supply chain management and analyze how e-commerce technologies enhance SCM effectiveness. 6. Discuss ethical issues in digital commerce and frameworks for promoting responsible business practices. 7. Evaluate historical developments and predict future trends in e-commerce and related technologies.
Indicative Contents المحتويات الإرشادية	1. E-Commerce Foundations: Definitions, characteristics, historical development, traditional vs digital commerce comparison 2. Business Model Framework: Detailed analysis of seven e-commerce models with practical applications 3. Cybersecurity in E-Commerce: Security threats, protection measures, privacy risks, and data protection methods 4. Ethical Considerations: Digital ethics frameworks, common ethical challenges, and compliance strategies 5. EDI Systems: EDI processes, document types, implementation benefits, and technical challenges 6. Digital Supply Chains: SCM components, technological integration, operational benefits, and management challenges 7. Risk Assessment: Analysis of technical and non-technical disadvantages across organizational, consumer, and societal perspectives

	8. Future Directions: Emerging trends in e-commerce, cybersecurity, and supply chain innovation 9. Practical Applications: Case studies, discussion topics, and real-world problem-solving exercises integrating all course components
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. Lecture & Case Study Fusion Core theory taught through lectures is immediately applied using real-world e-commerce and cybersecurity case studies. 2. Group Problem-Solving Small teams work on practical scenarios like designing security frameworks or troubleshooting EDI systems. 3. Comparative Debates Structured debates contrast traditional vs. e-commerce, different business models, and technology trade-offs. 4. Student-Led Discussions Students research and lead conversations on ethics and emerging trends to develop critical analysis skills. 5. Synthesis Projects Practical assignments require integrating multiple course elements into cohesive e-commerce solutions. 6. Digital Tools Integration LMS platforms and simulation software provide hands-on experience with relevant technologies. 7. Continuous Feedback Loop Regular constructive feedback and reflection prompts connect all course components to cybersecurity practice.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا
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Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	60	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	63	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	All
	Assignments	2	20% (20)	2 and 12	LO #2, #4 and #5, #8
	Projects / Lab.	-	-	-	-
	Report	1	10% (10)	13	LO #1, #3, #6 and #7
Summative assessment	Midterm Exam	2hr	10% (10)	7	All
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الأسبوعي النظري	
	Material Covered
Week 1	Introduction of E-Commerce (Definition, Key Characteristics, Examples)
Week 2	Traditional Commerce vs. E-Commerce

Week 3	Advantages (Organizations , Consumers, Society) and Disadvantages (Technical, Non_Technical)
Week 4	Introduction of E-Commerce Business Models
Week 5	Business-to-Business (B2B) and Business-to-Consumer (B2C)
Week 6	Consumer-to-Consumer (C2C) and Consumer-to-Business (C2B)
Week 7	Business-to-Government (B2G) and Government-to-Business (G2B)
Week 8	Government-to-Citizen (G2C) and Questions and Discussion
Week 9	Security in E-Commerce(Definition, Security Threats ,Security Measures)
Week 10	Privacy in E-Commerce (Definition, ,Risks and Protecting Privacy)
Week 11	Ethical Issues in E-Commerce(Definition , Issues and Promoting Ethical)
Week 12	Electronic Data Interchange (EDI) ((Definition, Benefits Challenges,))
Week 13	EDI Document Types (EDI Process Enterprise Resource Planning (ERP))
Week 14	Introduction of E-Commerce Supply Chain (Components ,Objectives)
Week 15	Benefits ,Technologies ,Challenges, Examples and Future Trends for Supply Chain
Week 16	Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1. Laudon, K. C., & Traver, C. G. (2023). <i>E-commerce: Business, Technology, Society</i> (17th ed.). Pearson.	No
Recommended Texts	2. Schneider, G. P. (2022). <i>Electronic Commerce</i> (13th ed.). Cengage Learning.	No
Websites		

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A – Excellent	امتياز	90 – 100	Outstanding Performance
	B - Very Good	جيد جدا	80 – 89	Above average with some errors
	C – Good	جيد	70 – 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 – 69	Fair but with major shortcomings
	E – Sufficient	مقبول	50 – 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Module 6

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

1. Course Name:	
	Mobile Applications
2. Course Code:	
	CyB302
3. Semester / Year:	
	1 st Semester/2025
4. Description Preparation Date:	
	12/09/2025

5. Available Attendance Forms:					
6. Number of Credit Hours (Total) / Number of Units (Total)					
3					
7. Course administrator's name (mention all, if more than one name)					
Name: Dr. Sari Ali Sari Email: sari.ali@uobasrah.edu.iq					
8. Email: Course Objectives					
Course Objectives		• Introduce students to the fundamentals of mobile applications and platforms. • Train students to design and implement interactive mobile user interfaces. • Develop mobile applications using Android Studio or Flutter. • Integrate applications with databases and online APIs. • Enable students to create and present a complete mobile project.			
9. Teaching and Learning Strategies					
Strategy		Lectures: to introduce theoretical concepts and principles of mobile applications. Laboratory Sessions: to provide hands-on experience in developing mobile applications. Tutorials: to enhance problem-solving skills and provide guidance on projects. Group Projects: to develop teamwork, communication, and practical development skills. Independent Study: students are encouraged to use recommended texts, online documentation, and self-learning to deepen their understanding. Interactive Discussions: to stimulate critical thinking and link theoretical knowledge with practice.			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1	3 (2T + 1L)	Understand mobile apps & platforms	Introduction to Mobile Applications	Lecture + Lab	Quiz
2	3 (2T + 1L)	Set up development environment & run app	Development Environment	Lecture + Lab	Lab exercise
3	3 (2T + 1L)	Describe app architecture & lifecycle	Mobile App Architecture	Lecture + Lab	Quiz
4	3 (2T + 1L)	Design simple UI	User Interface Design (Layouts, Widgets)	Lecture + Lab	Assignment
5	3 (2T + 1L)	Handle events & screen navigation	Event Handling & Navigation	Lecture + Lab	Quiz
6	3 (2T + 1L)	Implement local storage	Local Storage (Shared Prefs, SQLite)	Lecture + Lab	Lab work
7	3 (2T + 1L)	Apply knowledge from Weeks 1–6	Midterm Exam & Lab Test	Exam + Lab	Midterm
8	3 (2T + 1L)	Connect apps with APIs	Networking & APIs	Lecture + Lab	Lab exercise
9	3 (2T + 1L)	Work with multimedia & sensors	Multimedia & Sensors	Lecture + Lab	Assignment
10	3 (2T + 1L)	Implement background tasks & notifications	Services & Notifications	Lecture + Lab	Quiz
11	3 (2T + 1L)	Design advanced UI/UX	Advanced UI/UX Design	Lecture + Lab	Lab exercise
12	3 (2T + 1L)	Apply testing & debugging	Testing & Debugging	Lecture + Lab	Lab work
13	3 (2T + 1L)	Prepare deployment	Deployment (APK, Publishing)	Lecture + Lab	Report
14	3 (2T + 1L)	Present & evaluate projects	Final Project Presentations	Presentation	Project evaluation
15	3 (2T + 1L)	Review & wrap-up	Revision and Q&A	Interactive session	Participation
11. Course Evaluation					

Component	Details	Weight (Marks)	Percentage
Continuous Assessment	Quizzes (2)	10	10%
	Assignments	10	10%
	Lab Work / Practical Activities	10	10%
	Project / Group Work (Final Presentation)	5	5%
	Report / Documentation	5	5%
Midterm Exam		10	10%
Final Exam		50	50%
12. Learning and Teaching Resources			
Required textbooks (curricular books, if any)	Android Programming: The Big Nerd Ranch Guide – Bill Phillips, Chris Stewart		
Main references (sources)	Neil Smyth – Android Studio Development Essentials – Java Edition, Payload Media, 2020.		
Recommended books and references (scientific journals, reports...)	Flutter for Beginners – Alessandro Biessek		
Electronic References, Websites	- Android Developer Guide: https://developer.android.com/guide - Flutter Documentation: https://docs.flutter.dev		

Curriculum for the third Year, Second Semester.

Module 1

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information		
معلومات المادة الدراسية		
Module Title	Computer Network Security	Module Delivery

Module Type	Core	☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	CYB308		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	3	Semester of Delivery	1
Administering Department	CS	College	CSIS
Module Leader	Dr. Khulood A. Nassar	e-mail	Khulood.nassar@uobasrah.edu.iq
Module Leader's Acad. Title	Ass. Proof.	Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	15/01/2026	Version Number	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	CYB303	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	6. Introduce students to the foundational concepts, principles, and terminology of cOmputer network security. This includes understanding the importance of security for communication, networks, and the role of modern method of sending data saving. 7. Familiarize students with various methods for security of networks, standards, and best practices that are relevant to the field of communication security. This includes understanding sending and receiving requirements of security, best protocols, and main gools of security communication protocol.
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	8. Explore the principles and techniques of networks and communications security through standard detections. 9. Provide students with knowledge of development practices and methodologies of security. This involves offering data transmission techniques safely. 10. Introduce students to the fundamentals of computer network security. This includes learning how to addressing, as well as investigations of this addressing methods and preserving varabile them.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	10. Gain a comprehensive understanding of the fundamental concepts, principles, and terminology related to computer network security, including the importance of security communication systems. 11. Demonstrate knowledge and comprehension of various addressing methods, standards, and best practices relevant to data communication, including sending and recieving security requirements. 12. Apply the principles and techniques of security types, including understanding security of network architecture and communication protocols. 13. Apply software development practices and methodologies, including understanding common software applications of security. 14. Understand and apply the fundamentals of communication security, including security of data transmission media. 15. Apply the principles and protocols of communication, including understanding attacks methods, management, and the role of producing of the networks. 16. Apply skills in managing networks, including understanding communication safely. 17. Understand and apply considerations associated with data communication producing. 18. Demonstrate awareness and understanding of emerging technologies and trends in data communication producing , including devices, and Internet.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. • Module 1: Introduction to computer network security. [12 hrs] • Module 2: authentication. [12 hrs] • Module 3: network layer security. [12 hrs] • Module 4:firewalls. [12 hrs] • Module 5: intrusion detection systems. [12 hrs]
Learning and Teaching Strategies	

استراتيجيات التعلم والتعليم

Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	47	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	103	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #5, #8 and #10

Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to computer network security
Week 2	End point authentication
Week 3	Authentication protocols
Week 4	Extended authentication protocols
Week 5	Network layer security
Week 6	Virtual private networks
Week 7	AH and ESP protocol
Week 8	Security associations
Week 9	IP security datagram
Week 10	Mid exam
Week 11	Key management of IP security
Week 12	Operational security
Week 13	Firewalls
Week 14	Access control by firewalls
Week 15	Intrusion detection systems

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Introduction to use packet tracer simulator of RIP Protocol
Week 2	Design network with router depending of dynamic routing (RIP)
Week 3	Design network with 2 router depending of dynamic routing (RIP)
Week 4	Design network with 3 router depending of dynamic routing (RIP)
Week 5	Design network with 4 router depending of dynamic routing (RIP)
Week 6	Simulate security of server by IP address
Week 7	Simulate security of server by location address
Week 8	Design network with 2 server and realized security
Week 9	Simulate dynamic allocation of IP addresses
Week 10	Exam (1)
Week 11	Simulate firewall in simple network
Week 12	Simulate firewall in extended network
Week 13	Simulate firewall in network as gateway
Week 14	Simulate intrusion detection systems
Week 15	Exam (2)

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
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Required Texts	Ali Sadiqui, Willy, " Computer Network Security ", series Edition, Jon Wiley & Sons, Inc, 2020.	No
Recommended Texts	James F. Kurose & Kulth W. Ross . " Computer Networking : A Top-Down Approach ". Seventh Edition ,Person Education, Inc, 2017.	No
Websites		

Grading Scheme				
مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C – Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

Module 2

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Cloud Computing Principle		Module Delivery	
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☒ Tutorial ☒ Practical ☒ Seminar	
Module Code	CyB309			
ECTS Credits	4			
SWL (hr/sem)	100			
Module Level	1	1	Semester of Delivery	2
Administering Department	CyB		College	CSIS
Module Leader	Dr. Haider M. Al-Mashhadi		e-mail	
Module Leader's Acad. Title	Prof.		Module Leader's Qualification	PHD
Module Tutor	Name (if available)		e-mail	E-mail
Peer Reviewer Name	Name		e-mail	E-mail
Scientific Committee Approval Date			Version Number	1.0

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	Semester	
Co-requisites module	CyB Cloud Computing Principle	Semester	2/Level 1

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1. Gaining knowledge of cloud computing offers valuable insights into various other domains and disciplines. 2. Acquiring proficiency in the effective and responsible utilization and administration of cloud computing is crucial for managers and other professionals in today's interconnected global information-driven society. 3. Learn that people must understand the components of cloud computing and how all of these components work together to bring value to an organization. 4. We need to direct our attention to the role that cloud computing play in today's interconnected global information society. 5. The competitiveness of many companies relies significantly on the efficient utilization of information systems. Consequently, we need to consider the potential benefits and drawbacks that integrating information systems can bring to both businesses and society. what is a cloud computing? According to NIST Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction. (Special Publication 800-145). 1. why learning cloud computing? 2. why learning types of cloud computing?
	3. Why learn about virtualization? 4. Why learn about architecture of CC? 5. Why Learn about CC services?
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Provide the student with the essential skills required to excel in the cloud computing. 2- Acquire crucial skills for working with virtualization. 3- Gain essential skills for handling cc services

Indicative Contents المحتويات الإرشادية	Indicative content includes the following. - Principles of cloud computing How can use cloud computing, services, types.
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes and the activities, interactive tutorials, and by considering types of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	96	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6.4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Cloud computing
Week 2	Building cloud computing environments
Week 3	Principles of Parallel and Distributed Computing
Week 4	Virtualization
Week 5	Taxonomy of virtualization techniques

Week 6	Cloud Computing Architecture
Week 7	Types of clouds
Week 8	Open challenges
Week 9	CLOUD APPLICATION PROGRAMMING
Week 10	Cloud Platforms in Industry
Week 11	Cloud Applications
Week 12	Business and consumer applications
Week 13	Advanced Topics in Cloud Computing
Week 14	Market-based management of clouds
Week 15	Third-party cloud services
Week 16	Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	

Week 6	
Week 7	
Week 8	
Week 9	
Week 10	
Week 11	
Week 12	
Week 13	
Week 14	
Week 15	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Mastering Cloud Computing Foundations and Applications Programming by Rajkumar Buyya. Christian Vecchiola, S. Thamarai Selvi, 2013	No
Recommended Texts	Handbook of Cloud Computing: 2010	No
Websites		

Grading Scheme				
مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A – Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 – 89	Above average with some errors
	C – Good	جيد	70 – 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 – 69	Fair but with major shortcomings
	E – Sufficient	مقبول	50 – 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (فقد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

Module 3

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية

Module Title	Secure Communication Protocols		Module Delivery	
Module Type	Core		☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	CyB 311			
ECTS Credits	4			
SWL (hr/sem)	125			
Module Level	3	Semester of Delivery	2	
Administering Department	CyB	College	CSIS	
Module Leader		e-mail		
Module Leader's Acad. Title	Assist Prof	Module Leader's Qualification	PHD	
Module Tutor	Name (if available)	e-mail	E-mail	
Peer Reviewer Name	Name	e-mail	E-mail	
Scientific Committee Approval Date		Version Number	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	Semester	
Co-requisites module		Semester	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	44. Understand Internet. 45. Understand the communication process through Internet

	46. The ability to understand the problems and find if they can be solved using Internet protocols. 47. Understand the main types of data communication. 48. Learn the basic security principals for data communication. 49. Understanding the different layers of data communication. 50. Explore the main Internet protocols.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	26. Explain the basic concepts in of data communication through a set of tools. 27. Acquiring skills in addressing the mathematical problems and proof the solution. 28. Acquiring basic skills as an introduction to language construction. 29. Acquiring theoretical concepts to deal with (connection-oriented and connection-less communication 30. The ability to design Open system Interconnection networking Model. 31. The ability to design TCP/IP networking model. 32. Ability to distinguish between different types of data communication. 33. The logical thinking to formulate the problems and solutions.
Indicative Contents المحتويات الإرشادية	

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through: - Readings, self-learning, discussion panels. - Exercises and activities in the classroom. - Directing students to some websites to benefit from them to develop their capabilities.

	- Holding research seminars through which some problems are explained and analyzed and the mechanism for finding solutions to them.
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Student Workload (SWL)			
الحمل الدراسي للطلاب محسوب لـ ١٥ أسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	62	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	4.1
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	63	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	4.2
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	125		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	All
	Assignments	2	20% (20)	2 and 12	LO #2, #4 and #5, #8
	Projects / Lab.	-	-	-	-
	Report	1	10% (10)	13	LO #1, #3, #6 and #7
Summative assessment	Midterm Exam	2hr	10% (10)	7	All
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to Internet
Week 2	Introduction to data communication
Week 3	The basic structure of Internet
Week 4	Connection-oriented versus Connection-less communication
Week 5	OSI networking model
Week 6	TCP/IP networking model
Week 7	Mid-Term Exam
Week 8	Transmission Control Protocol (TCP) and User Datagram Protocol (UDP)
Week 9	Internet Protocol and its Header
Week 10	Domain Name System (DNS)
Week 11	Email and Simple Mail Transfer Protocol
Week 12	Wireless-Fidelity (Wi-Fi)
Week 13	Hyper Text Transfer Protocol (HTTP)
Week 14	File Transfer Protocol (FTP)
Week 15	Internet Secure Access
Week 16	Final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Computer Networking and the Internet", Fifth Edition, 2005.	
Recommended Texts	Computer Networking: A Top-Down Approach", 7th Edition, 2016.	
Websites		

Grading Scheme				
مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A – Excellent	امتياز	90 – 100	Outstanding Performance
	B - Very Good	جيد جدا	80 – 89	Above average with some errors
	C – Good	جيد	70 – 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 – 69	Fair but with major shortcomings
	E – Sufficient	مقبول	50 – 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

Module 4

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Information Risk Management		Module Delivery
Module Type	Core		☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	CyB 310		
ECTS Credits	4		
SWL (hr/sem)	125		
Module Level		2	
Administering Department		CyB	College
Module Leader			e-mail
Module Leader's Acad. Title		Assist lect	Module Leader's Qualification
Module Tutor		Name (if available)	e-mail
Peer Reviewer Name		Name	e-mail
Scientific Committee Approval Date			Version Number
			1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	Semester	
Co-requisites module		Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	51. Understand the concept of information risk management and its role in protecting organizational information assets. 52. Identify different types of information security risks, including technical, operational, and human-related risks. 53. Analyze threats and vulnerabilities that may impact confidentiality, integrity, and availability (CIA triad). 54. Assess risk likelihood and impact using qualitative and quantitative risk assessment methods. 55. Apply risk management frameworks and standards such as ISO/IEC 27005 and NIST Risk Management Framework. 56. Evaluate and prioritize risks based on organizational risk appetite and tolerance. 57. Select appropriate risk treatment options, including risk acceptance, mitigation, transfer, and avoidance. 58. Design and recommend security controls to reduce identified risks effectively. 59. Monitor and review risks continuously to ensure controls remain effective over time.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	34. Define information risk management and explain its importance in protecting organizational information assets. 35. 36. Identify information security threats, vulnerabilities, and risks affecting information systems. 37. Explain the impact of risks on confidentiality, integrity, and availability (CIA triad).

	38. Analyze risk scenarios by evaluating likelihood and potential impact. 39. Apply information risk management frameworks and standards such as NIST RMF and ISO/IEC 27005. 40. Assess and prioritize risks based on organizational risk appetite and tolerance levels. 41. Select and justify appropriate risk treatment strategies (accept, mitigate, transfer, avoid). 42. Design suitable security controls to reduce or manage identified information risks. 43. Monitor and review risks and controls to ensure ongoing effectiveness.
Indicative Contents المحتويات الإرشادية	

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through: - Readings, self-learning, discussion panels. - Exercises and activities in the classroom. - Directing students to some websites to benefit from them to develop their capabilities. - Holding research seminars through which some problems are explained and analyzed and the mechanism for finding solutions to them.

Student Workload (SWL) الحمل الدراسي للطلاب محسوب لـ ١٥ أسبوعا			
Structured SWL (h/sem)	62	Structured SWL (h/w)	4.1

الحمل الدراسي المنتظم للطالب خلال الفصل		الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	63	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	All
	Assignments	2	20% (20)	2 and 12	LO #2, #4 and #5, #8
	Projects / Lab.	-	-	-	-
	Report	1	10% (10)	13	LO #1, #3, #6 and #7
Summative assessment	Midterm Exam	2hr	10% (10)	7	All
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Cybersecurity Risk Management

	• Learning objectives: Define risk, threat, vulnerability, impact; explain risk management lifecycle; outline course expectations and assessment. • Topics: - o Key concepts: CIA triad, risk, threat, vulnerability, impact, likelihood - o Risk management lifecycle: identify, assess, treat, monitor, communicate - o Overview of frameworks: NIST RMF/CSF, ISO 27001/27005, FAIR (overview) • Activities: Icebreaker case: identify risks in a campus IT service; quick risk vocabulary quiz • Readings: ISO/IEC 27001, 27005 (intro sections); NIST CSF introductory material • Assessment: Short quiz; 1-page reflection on governance vs. policy
Week 2	: Governance, Stakeholders, and Risk Appetite • Learning objectives: Identify stakeholders; discuss governance, policy vs. procedure; define risk appetite and culture. • Topics: - o Stakeholder mapping; governance structures; roles (board, exec, IT, security, compliance, legal, HR) - o Risk appetite, tolerance, culture - o Policy framework alignment • Activities: Stakeholder role-play exercise; map a simple risk governance structure • Readings: NIST SP 800-39 (Organization-wide risk management) overview; selected ISO 27001 sections
Week 3	• Learning objectives: Identify assets; differentiate asset types; begin asset inventories. • Topics: - o Asset types: information, systems, people, processes, third parties - o Asset inventory techniques; critical asset identification

	- Activities: Build a sample asset inventory for a department; catalog critical assets - Readings: ISO 27001 control A.8 (Asset management) overview - Assessment: Asset inventory submission with justification of criticality
Week 4	Threat Modeling Basics.
Week 5	Vulnerabilities and Mapping Threats to Assets
Week 6	Business Impact Analysis (BIA) and RTO/RPO
Week 7	Qualitative Risk Assessment Methods
Week 8	Quantitative Risk Assessment and Data
Week 9	Control Taxonomy and Defense in Depth
Week 10	Privacy, Legal, and Ethical Considerations
Week 11	Selecting and Evaluating Controls
Week 12	Risk Communication and Reporting
Week 13	Incident Response and Recovery Risk
Week 14	Security Operations, Monitoring, and Continuous Improvement
Week 15	Capstone Design and Program Design
Week 16	Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Cyber Risk Resources for Practitioners	
Recommended Texts		

Websites	
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Grading Scheme				
مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A – Excellent	امتياز	90 – 100	Outstanding Performance
	B - Very Good	جيد جدا	80 – 89	Above average with some errors
	C – Good	جيد	70 – 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 – 69	Fair but with major shortcomings
	E – Sufficient	مقبول	50 – 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

Module 5

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information		
معلومات المادة الدراسية		
Module Title	MALICIOUS CODE	Module Delivery

Module Type	Core		☒ Theory ☐ Lecture ☒ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	CyB312			
ECTS Credits	6			
SWL (hr/sem)	150			
Module Level	1	Semester of Delivery	1	
Administering Department	CyB	College	CSIS	
Module Leader	Dr. Sari Ali Sari		e-mail	sari.ali@uobasrah.edu.iq
Module Leader's Acad. Title	Assist Proff		Module Leader's Qualification	PHD
Module Tutor	Name (if available)		e-mail	E-mail
Peer Reviewer Name	Name		e-mail	E-mail
Scientific Committee Approval Date		Version Number	1.0	

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	Semester	
Co-requisites module	CyB107 Computer Programming II	Semester	2/Level 3

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1. Gain knowledge about the functioning of malware which includes computer viruses, worms, Trojan horses and spyware. 2. Know the functions of each malicious program, including stealing, encrypting or deleting sensitive data, changing or stealing basic computer functions, and monitoring users' computer activity without their permission.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Recognize Malicious software. 2. List the various terms associated with Malicious Code. 3. Summarize the different types of malicious software.
Indicative Contents المحتويات الإرشادية	1. Study all generations of Antiviruses. 2. Learning virus kits and virus tools.
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Methodological books, resources (internet and library), dialogues reinforced with illustrative examples, Theoretical lectures, laboratories, practical tasks, using modern devices to present practical ideas to students (data show, electronic board).

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	96	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6.4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Malicious Software definition - Types Of Malicious Software - Backdoor - Logic Bomb
Week 2	- Trojan - Horses - Mobile Code - Multiple-Threat Malware
Week 3	Viruses understanding Viruses

Week 4	The Nature of viruses
Week 5	Viruses Classification • Viruses Kits • Marco Viruses
Week 6	quiz
Week 7	E-Mail Viruses • Boot Sector Viruses • Executable Viruses
Week 8	Virus Countermeasures • Antivirus Approaches • Advanced Antivirus Techniques
Week 9	Worms • Introduction of worms • Understanding Viruses Propagation
Week 10	The Morris Worm • Worm Propagation Model • Recent Worm Attacks
Week 11	quiz
Week 12	State of Worm Technology • Mobile Phone Worms • Worm Countermeasures
Week 13	Middle Exam
Week 14	Distributed Denial of Service Attacks Constructing the Attack Network
Week 15	DDoS Countermeasures
Week 16	Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Malware analysis • Malware analysis purposes • Step-by-step analysis • Malware analysis stages/flow • Malware analysis laboratory • Virtual machine • Virtual network
Week 2	Basic Static Analysis • Antivirus scanning • Malware hashing • Malware string • Detect malware packer/obfuscated • Inspect Portable Executable (PE) Header • Exploring Dynamic Link Library (DLL)
Week 3	Basic Dynamic Analysis • Dynamic analysis • Sandboxing • Dynamic analysis tools • Running malware
Week 4	Malware runtime analysis • Malware Runtime Analysis • Process monitor • Process explorer • Snapshot
Week 5	Network monitoring • Network packet sniffing • Fake services

Week 6	Advance Static Analysis • Core X86 assembly concept • X86 architecture • Main memory • Register • Stack • Assembly instruction
Week 7	Analyzing malicious code • Windows API • File system functions • Windows registry • DLL • Exception
Week 8	quizz
Week 9	Malware Behavior • Malware Functionalities • HTTP Command and Control • Custom Command and Control • Custom C2 Sample • PowerShell Command • How Attackers Use PowerShell • PowerSHell Attack
Week 10	Code debugging • Breakpoints • Exception • Modify program execution • User/kernel mode

Week 11	Malware debugging with OllyDbg • OllyDbg • Code execution • Run/step Into/step over • Breakpoints
Week 12	Loading DLLKernel debugging with WinDbg Setup kernel debugging • VM setup • Using WinDbg • Reading from memory • Kernel Debugging in Practice
Week 13	Self Defending Malware • Packer and unpacking • Packer identification methods • Unpacking complexities • Structured exception handlers • Original Entry Point (OEP)
Week 14	quiz
Week 15	Bypassing analysis defences • Multiple malware defensive techniques • Anti-disassembly • Anti-debugging • Anti-virtual machine

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	• Cryptography And Network Security- Principles And Practice- Fifth Edition William Stallings. • Cyber security Essentials, James Graham, Richard Howard, Ryan Olson,2011.	No
Recommended Texts	• Computer viruses and malware by john AY cock University of calgary canada 2006 springer	No
Websites	https://www.guru99.com/python-tutorials.html	

Grading Scheme				
مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A – Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 – 89	Above average with some errors
	C – Good	جيد	70 – 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 – 69	Fair but with major shortcomings
	E – Sufficient	مقبول	50 – 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				